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Ignite

LIVE PRODUCTION CONTROL SYSTEM
SDC/HDC Robotic Camera

Instruction Manual

071849200
SEPTEMBER 2006

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The www.thomsongrassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Software updates, drivers, and patches can be downloaded.

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Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment

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Preface

About This Manual

This manual is for technical personnel responsible for installation, setup, and operation of an Ignite SDC/HDC robotic camera.

This manual is for camera models SDC-3100P/-3110P/-3100N/-3110N and HDC-3200/-3210/-3300/-3310.

Standard Documentation

The standard Ignite SDC/HDC robotic camera documentation set comprises:

- SDC/HDC Robotic Camera Instruction Manual
- JSC-2300 SHOT Director™ Robotics/Camera Controller Instruction Manual

Other Documentation

The flexible design of the Ignite SDC/HDC robotic camera allows operation in stand-alone manual control (ProAV) environments, or as an integrated component of a fully automated Ignite Live Production Control System. This manual provides information to install and operate the camera in either environment. For specific details about Ignite systems, refer to the Ignite Live Production Control System documentation listed below:

- Installation Planning Guide
- Installation and Service Manual
- User Manual
- Release Notes

Note The Ignite Live Production Control System documentation describes peripheral components as they relate to the Ignite system. For any other peripheral component information, refer to the respective support documentation.

Safety Summary

Read and follow the important safety information below, noting especially those instructions related to risk of fire, electric shock or injury to persons. Additional specific warnings not listed here may be found throughout the manual.

WARNING Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Safety Terms and Symbols

Terms in This Manual

Safety-related statements may appear in this manual in the following form:

WARNING Warning statements identify conditions or practices that may result in personal injury or loss of life.

CAUTION Caution statements identify conditions or practices that may result in damage to equipment or other property, or which may cause equipment crucial to your business environment to become temporarily non-operational.

Terms on the Product

The following terms may appear on the product:

DANGER — A personal injury hazard is immediately accessible as you read the marking.

WARNING — A personal injury hazard exists but is not immediately accessible as you read the marking.

CAUTION — A hazard to property, product, and other equipment is present.

Symbols on the Product

The following symbols may appear on the product:

Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Indicates that user, operator or service technician should refer to product manual(s) for important operating, maintenance, or service instructions.

This is a prompt to note fuse rating when replacing fuse(s). The fuse referenced in the text must be replaced with one having the ratings indicated.

Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.

Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

Indicates that static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Warnings

The following warning statements identify conditions or practices that can result in personal injury or loss of life.

Dangerous voltage or current may be present — Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

Avoid exposed circuitry — Do not touch exposed connections, components or circuitry when power is present.

Use proper power cord — Use only the power cord supplied or specified for this product.

Ground product — Connect the grounding conductor of the power cord to earth ground.

Operate only with covers and enclosure panels in place — Do not operate this product when covers or enclosure panels are removed.

Use only in dry environment — Do not operate in wet or damp conditions.

Use only in non-explosive environment — Do not operate this product in an explosive atmosphere.

High leakage current may be present — Earth connection of product is essential before connecting power.

Cautions

The following caution statements identify conditions or practices that can result in damage to equipment or other property

Use correct power source — Do not operate this product from a power source that applies more than the voltage specified for the product.

Use correct voltage setting — If this product lacks auto-ranging power supplies, before applying power ensure that the each power supply is set to match the power source.

Do not operate with suspected equipment failure — If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.

Ensure mains disconnect — If mains switch is not provided, the power cord(s) of this equipment provide the means of disconnection. The socket outlet must be installed near the equipment and must be easily accessible. Verify that all mains power is disconnected before installing or removing power supplies and/or options.

Route cable properly — Route power cords and other cables so that they ar not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.

Use correct power supply cords — Power cords for this equipment, if provided, meet all North American electrical codes. Operation of this equipment at voltages exceeding 130 VAC requires power supply cords which comply with NEMA configurations. International power cords, if provided, have the approval of the country of use.

Do not disassemble the camera — There are no user-serviceable parts inside. Refer any servicing to qualified service personnel.

Do not abuse camera — Handle the camera with care. Avoid striking, shaking, etc. The camera contains sensitive components which could be damaged by improper handling or storage.

Cap the lens when camera is not in use — Protect the precision made lens by placing the lens cap over the lens when the camera is not in use. If the lens is not installed, protect the surface of the prism by placing the body cap into the lens mount hole. Use a mild blower or lens cleaning tissue designed for coated lenses, to clean the surface of the lens or prism in the event that it should become dirty. Do not touch the surface of the lens or prism.

Do not aim the camera toward the sun — Even with power off, the camera optics could be damaged. Use caution when operating the camera in the vicinity of spot lights or bright lights, as well as light reflecting objects and surfaces.

Do not use the camera in high temperatures or high humidity environments — Use the camera in an environment where the temperature is within 32 °F (0 °C) to +104 °F (+40 °C), and the relative humidity is within 30% to 90% (no condensation).

Do not leave the camera turned on when not in use.

Do not turn camera power on and off repeatedly.

Do not block the ventilation slots — Internal heat buildup can cause a fire.

Regulatory Notices

Certifications and Compliances

FCC Emission Control

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Grass Valley Group can affect emission compliance and could void the user's authority to operate this equipment.

Canadian EMC Notice of Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

EN55022 Class A Warning

For products that comply with Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Canadian Certified Power Cords

Canadian approval includes the products and power cords appropriate for use in the North America power network. All other power cords supplied are approved for the country of use.

Canadian Certified AC Adapter

Canadian approval includes the AC adapters appropriate for use in the North America power network. All other AC adapters supplied are approved for the country of use.

Certification

Category	Standard	Designed/tested for compliance with:
Safety	UL1950	Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1993).
	IEC 950	Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1991).
	CAN/CSA C22.2, No. 950-93	Safety of Information Technology Equipment, including Electrical Business Equipment.
	EN60950	Safety of Information Technology Equipment, including Electrical Business Equipment.

Section 1

Overview

Introduction

The Ignite SDC/HDC robotic camera (Figure 1) is a compact, fully-integrated, remote-control camera designed for worldwide Broadcast and high-end ProAV applications.

Figure 1. Ignite SDC/HDC Robotic Camera

Both SDC and HDC models feature internet protocol (IP) control, converged pan/tilt/focus/zoom operation for seamless on-air movements, fast pan and tilt speed (90°/s maximum), 300 location presets, 600 seconds of movement recalls, super-quiet operation <30 dBm @ 1 m, integrated dual-color light-emitting diode (LED) tally light, optional JSC-2300 SHOT Director™ robotics/camera controller, optional 17" high-brightness through-the-lens (TTL) prompter assembly, and optional inverted mounting for ceiling and track installations.

The SDC (standard definition camera) model features three 2/3" interline, supersensitive charge-coupled devices (CCD), switchable 4:3/16:9 aspect ratio, serial digital interface (SDI) and analog composite video outputs, 850 lines of resolution, and 62 dB NTSC/61 dB PAL S/N ratio.

The HDC (high definition camera) model features three high-sensitivity 2/3" interline transfer - charge-coupled devices (IT-CCD), switchable 720p/1080i support for global HD formats (1080/60i/59.94i/50i/30p/25p/24p and 720/60p/59.94p/50p), multi-mode (NTSC/PAL) support, sensitivity of F10.0 at 2,000 lux, and S/N ratio of 54 dB.

Hardware Description

Note To order SDC/HDC Robotic Camera hardware and accessories listed in this manual, refer to *Contacting Grass Valley* on page 4.

SDC/HDC robotic cameras contain a camera block with integrated tally light, mounted on a robotic pan/tilt head and pedestal mount. HDC models come with either premium or standard lens. A TTL prompter is also provided with select SDC/HDC models.

Ignite SDC/HDC robotic camera models and their features are listed in Table 1.

Table 1. SDC/HDC Robotic Camera Models

Model	Definition	Format	Lens	Prompter	Tally
SDC-3100N	Standard	NTSC	Standard	Not Included	Yes
SDC-3110N	Standard	NTSC	Standard	Through-The-Lens (TTL)	Yes
SDC-3100P	Standard	PAL	Standard	Not Included	Yes
SDC-3110P	Standard	PAL	Standard	TTL	Yes
HDC-3200	High-Definition	Multi	Standard	Not Included	Yes
HDC-3210	High-Definition	Multi	Standard	TTL	Yes
HDC-3300	High-Definition	Multi	Premium	Not Included	Yes
HDC-3310	High-Definition	Multi	Premium	TTL	Yes

Additional Equipment (Required)

SHOT Director Robotics/Camera Controller

The JSC-2300 SHOT Director™ robotics/camera controller is a unique, multiple-camera control device combining pan/tilt and CCU control. The SHOT Director provides professional-quality, fingertip control of up to 16 Ignite SDC/HDC robotic cameras.

Note At least one JSC-2300 SHOT Director™ robotics/camera controller is required to operate up to 16 cameras.

Ethernet Hub

An Ethernet hub, (10/100/1000 Base TX, auto-sensing) is required to connect up to 16 Ignite SDC/HDC robotic cameras to a JSC-2300 SHOT Director robotics/camera controller.

Optional Mounting Hardware

The following optional mounting hardware is recommended for use with Ignite SDC/HDC robotic cameras.

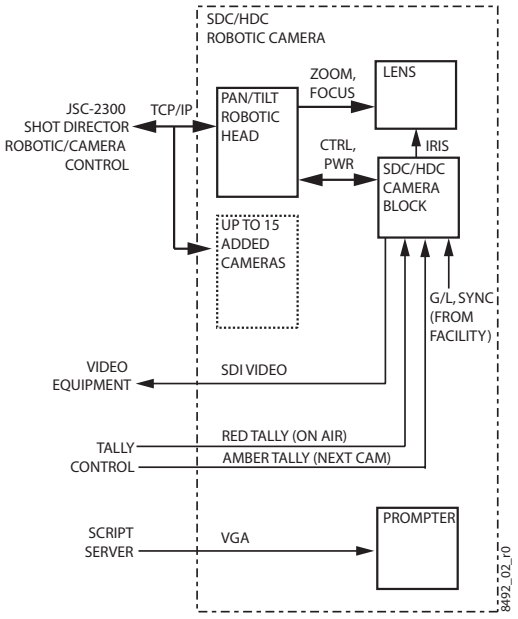
- Tripod
- Tripod mounting plate
- Wall mount
- Environmental dome

Functional Description

Robotic Camera

The SDC/HDC robotic camera receives TCP/IP control inputs (pan/tilt/zoom/focus) from the JSC-2300 SHOT Director robotics/camera controller (Figure 2).

Figure 2. SDC/HDC Robotic Camera Functional Block Diagram



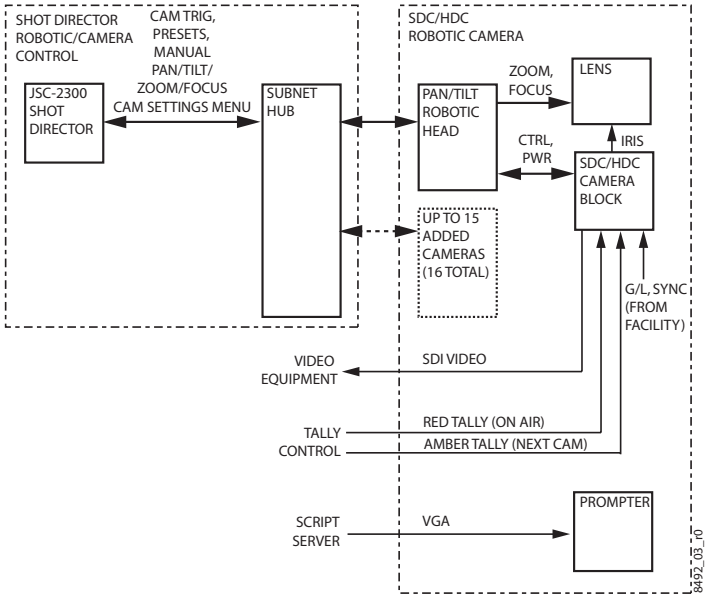
The robotic head processes the pan and tilt inputs and moves the camera to the commanded location. It passes zoom and focus commands to the lens assembly. It also provides a communication path between the camera head and SHOT Director (for configuration and status monitoring), and provides 12 V dc to power the camera block.

The camera block receives 12 V dc power from the robotic head, tally (red and amber) dry contact control from a tally controller, and facility supplied gen-lock (sync). The camera provides iris control to the lens assembly, status and configuration menu access to the SHOT Director (through the robotic head assembly), and produces SDI video out to station switching and processing equipment.

Robotic Camera and SHOT Director

Robotic camera control requires connection to a JSC-2300 SHOT Director robotics/camera controller through a network hub. (Figure 3)

Figure 3. SDC/HDC Robotic Camera and JSC-2300 SHOT Director Functional Block Diagram



The SHOT Director can control up to 16 cameras. It provides the camera trigger and preset/manual control commands (pan/tilt/zoom/focus) to the robotic head. Camera presets are created and stored in the SHOT Director. You can also access and make configuration changes to the camera block settings menu with the SHOT Director.

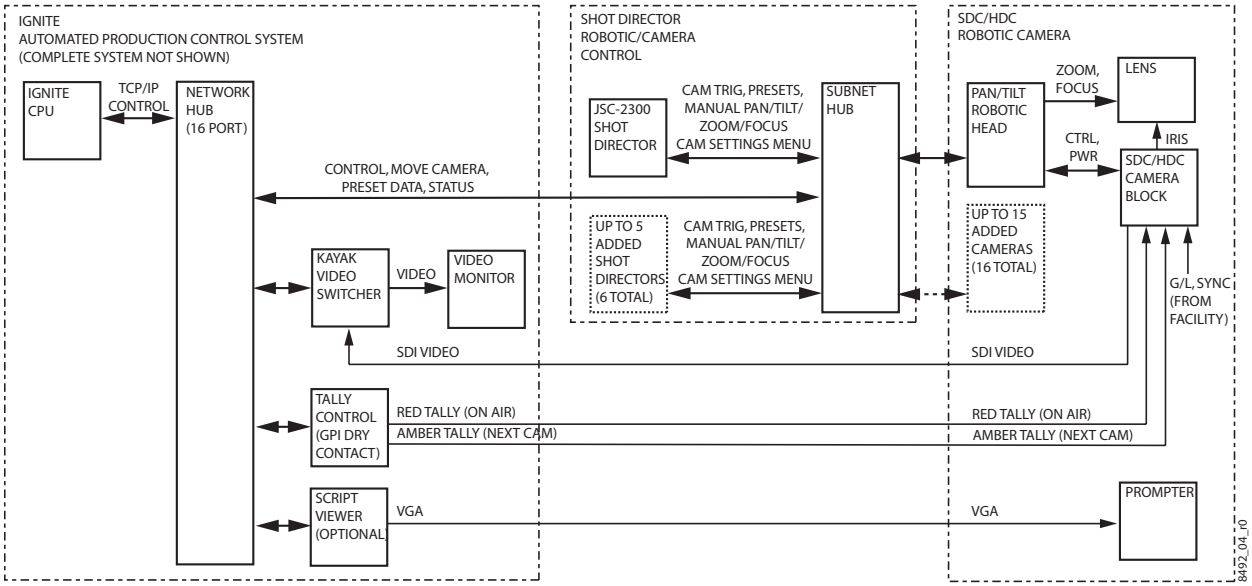
Robotic Camera and Ignite Automated Production Control System

The SDC/HDC robotic camera was designed to operate as an integrated part of an Ignite automated production control system. (Figure 4).

The Ignite system provides TCP/IP automation control to the JSC-2300 SHOT Director robotics/camera controller, video switcher, tally controller, and optional Script Viewer devices.

Note Up to six SHOT Directors and sixteen cameras can be used in an Ignite system.

Figure 4. Ignite SDC/HDC Robotic Camera Functional Block Diagram



Section 2

Installation

Unpacking

Check all parts received against the packing list enclosed with your shipment, and examine the equipment for any shipping damage. Immediately report any missing or damaged items to the carrier and to your Grass Valley Service Representative (See *Contacting Grass Valley* on page 4).

Keep all manuals supplied with your equipment. You will need them to complete the installation procedures.

Installation Procedures

General

Before you can use your Ignite SDC/HDC robotic camera, you must:

1. Mount the robotic assembly onto a tripod (or other mounting surface).
2. Install the optional prompter onto the robotic pan/tilt head assembly.
3. Install the camera/lens assembly onto the prompter, or directly onto the robotic pan/tilt head (if the optional prompter was not purchased).
4. Connect cables.

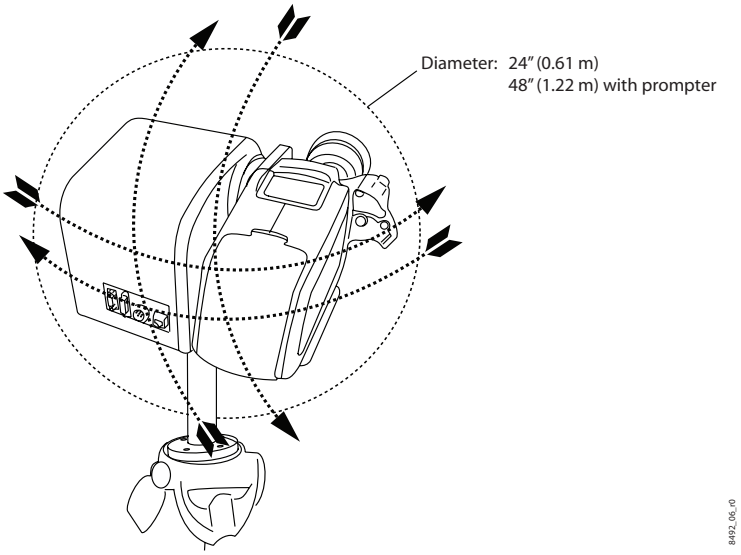
Robotic Pan/Tilt Head Assembly

Note Ignite SDC/HDC robotic cameras are suitable for inverted mounting.

1. Check the selected camera location to ensure that there is enough clearance (Figure 5) for the fully assembled camera, prompter, and cables to pan and tilt without obstruction.

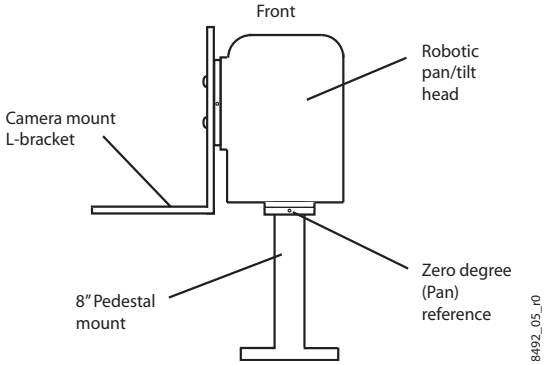
   If necessary, you can limit pan and/or tilt movement by adjusting the pan/tilt head soft stops via the SHOT Director controller. Refer to the JSC-2300 SHOT Director Robotics/Camera Controller Instruction Manual.

Figure 5. Clearance Diagram



2. On the stationary ring at the top of the pedestal mount (Figure 6), locate the zero-degree (pan) position labeled FRONT. Point the FRONT label in the direction that best reflects the center of travel in which the camera will be used (usually the center of the room).

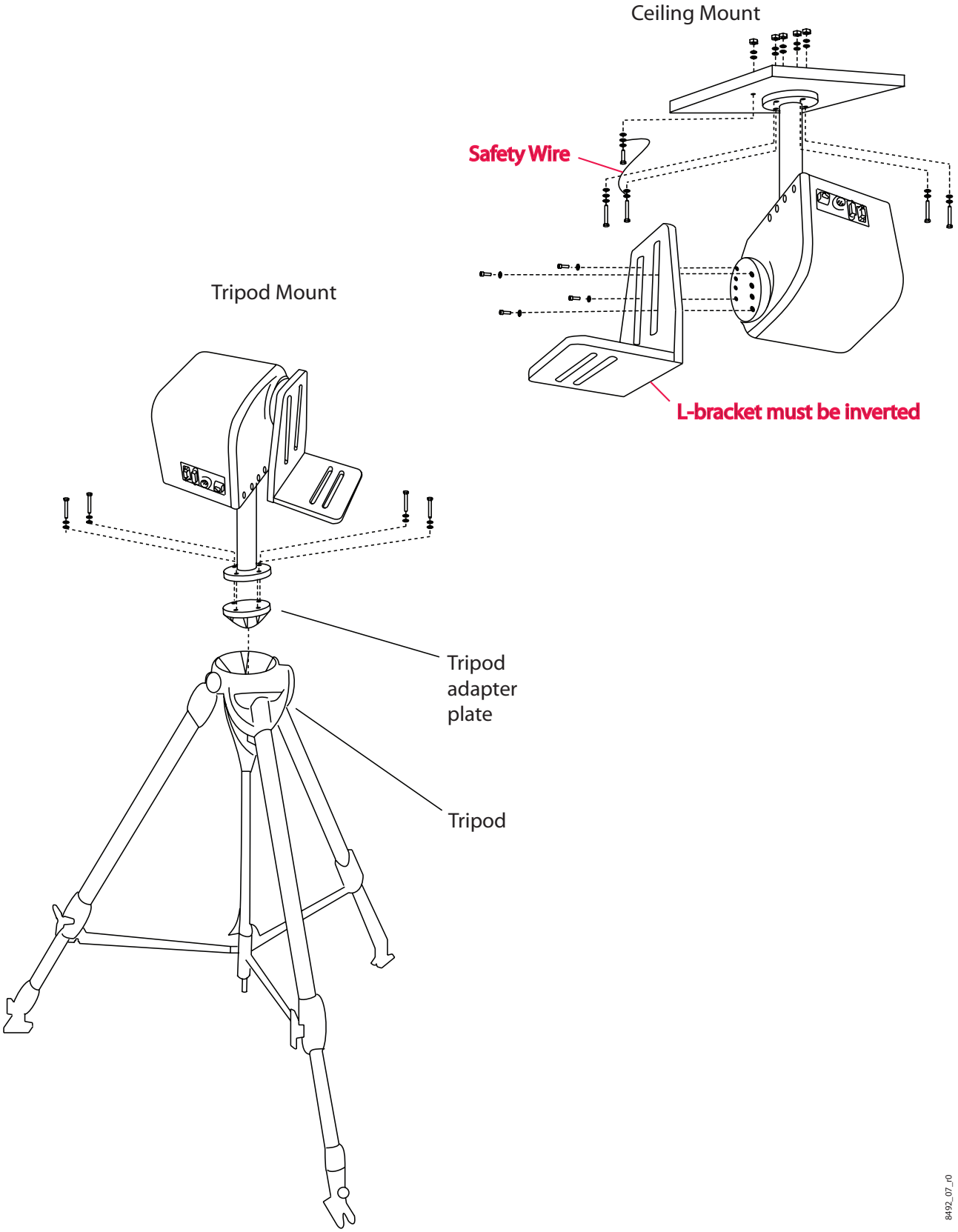
Figure 6. Robotic Pan/Tilt Head Assembly



CAUTION Ensure that the selected mounting surface and hardware can safely support the weight of a fully assembled unit (approximately 55 lbs (29.95 kg)).

3. If ceiling/inverted mounting is required:
   - Remove the L-bracket, rotate it 180 degrees, then re-attach it to the robotic pan/tilt head.
   - Attach a safety wire or chain, that can support the 55 lb (29.95 kg) weight of the fully assembled unit to one of the bolts in the pedestal mount flange and secure the other end to a rigid part of the ceiling/mounting location.
4. Attach the robotic pan/tilt head assembly to the selected mounting location. Use the four mounting holes in the pedestal mount flange as shown in Figure 7.

Figure 7. Robotic Pan/Tilt Head Mounting

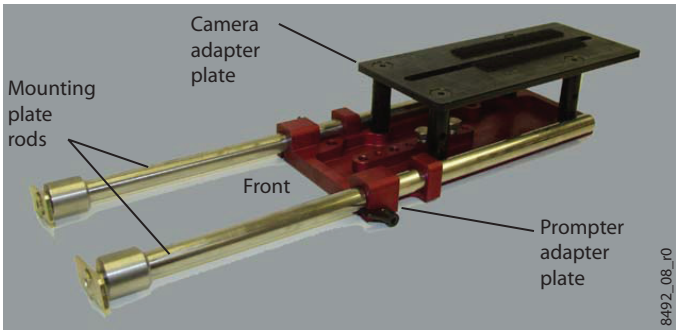


Prompter Adapter Plate (Optional)

Note The prompter assembly is supported by a mounting plate that sits beneath the camera assembly.

1. Attach camera adapter plate to prompter adapter plate (Figure 8).

Figure 8. Prompter and Camera Adapter Plates

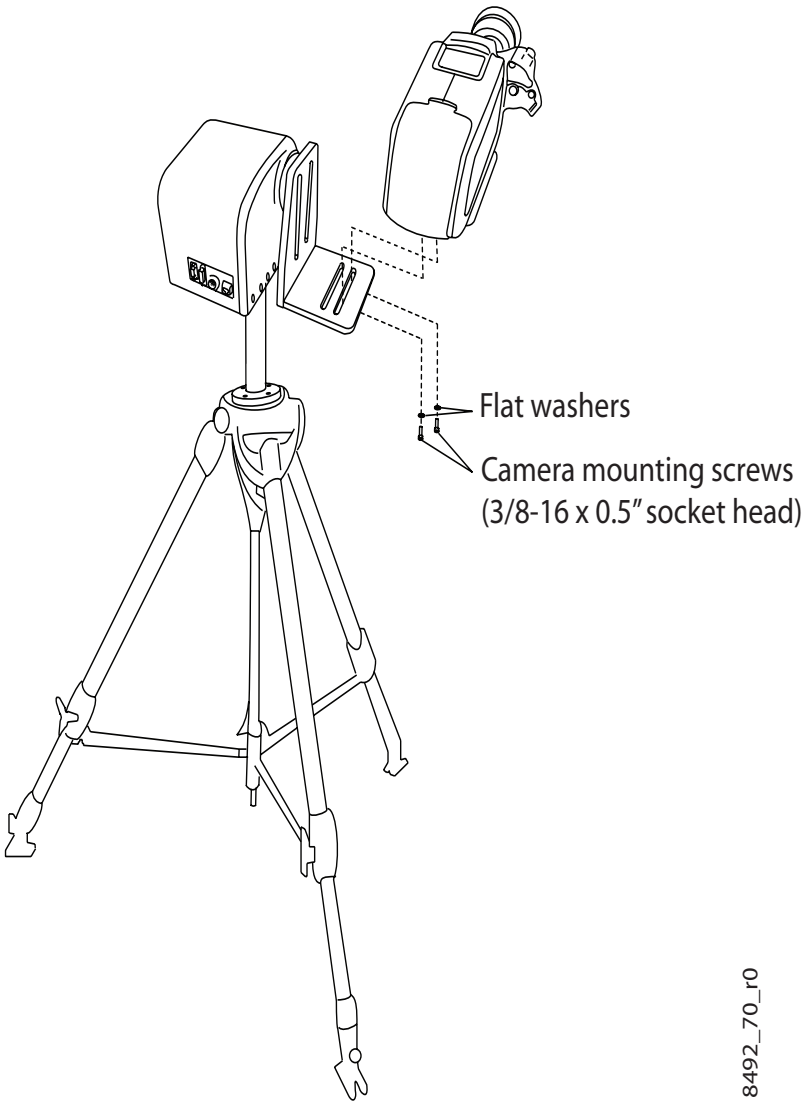


2. Attach the main body of the prompter adapter plate to the robotic pan/tilt head assembly L-bracket so that the T-bolt end of the two rods attached to the mounting plate extend to the front of the robotic pan/tilt head assembly.

Camera/Lens Assembly

1. Ensure camera/lens assembly is oriented toward the front of the pan/tilt head assembly.
2. Mount the camera/lens assembly to the camera adapter plate (if installing prompter), or directly to the robotic pan/tilt head assembly L-bracket with two 3/8-16 x 0.5″ socket head screws.

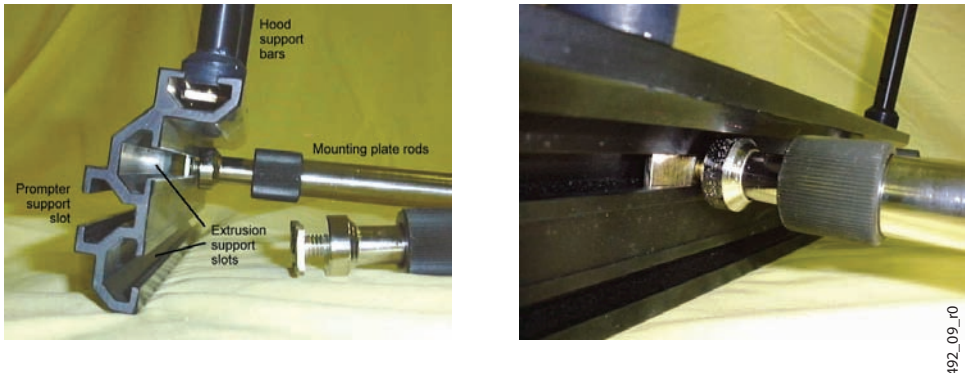
Figure 9. Camera/Lens Assembly Mounting



Prompter (Optional)

1. Slide extrusion slots onto mounting plate rods and rotate rods to tighten (Figure 10). Mounting plate rods slide into the back of the extrusion where two slots provide alternative vertical positions for the prompter. The rods attach to the extrusion using a T-bolt that is tightened by turning the rod.

Figure 10. Extrusion



2. Rotate the drop plates to the orientation shown in Figure 11.

Figure 11. Drop Plates

3. Attach drop plates to extrusion and tighten red fixing screws. A choice of mounting holes are provided to raise and lower the monitor in relation to the hood to prevent the outer edge of the TFT screen from appearing in the shot.
4. Attach the hood to the extrusion and rotate hood columns to tighten.
5. Move prompter unit back on the support rods until the lens is nearly touching the glass and lock in position with small locking levers.
6. Slide the whole prompter assembly back on the mounting plate rods to obtain best possible balance of the pan/tilt L-bracket. Attach counterweights if necessary.

System Interconnection

Use Figure 12 and the following steps to connect the camera, lens, pan/tilt head, and prompter assemblies to a JSC 2300 SHOT Director controller and an Ignite system. If you are not connecting to an Ignite system use the following steps and Figure 13.

Figure 12. Interconnect (with Ignite) Diagram

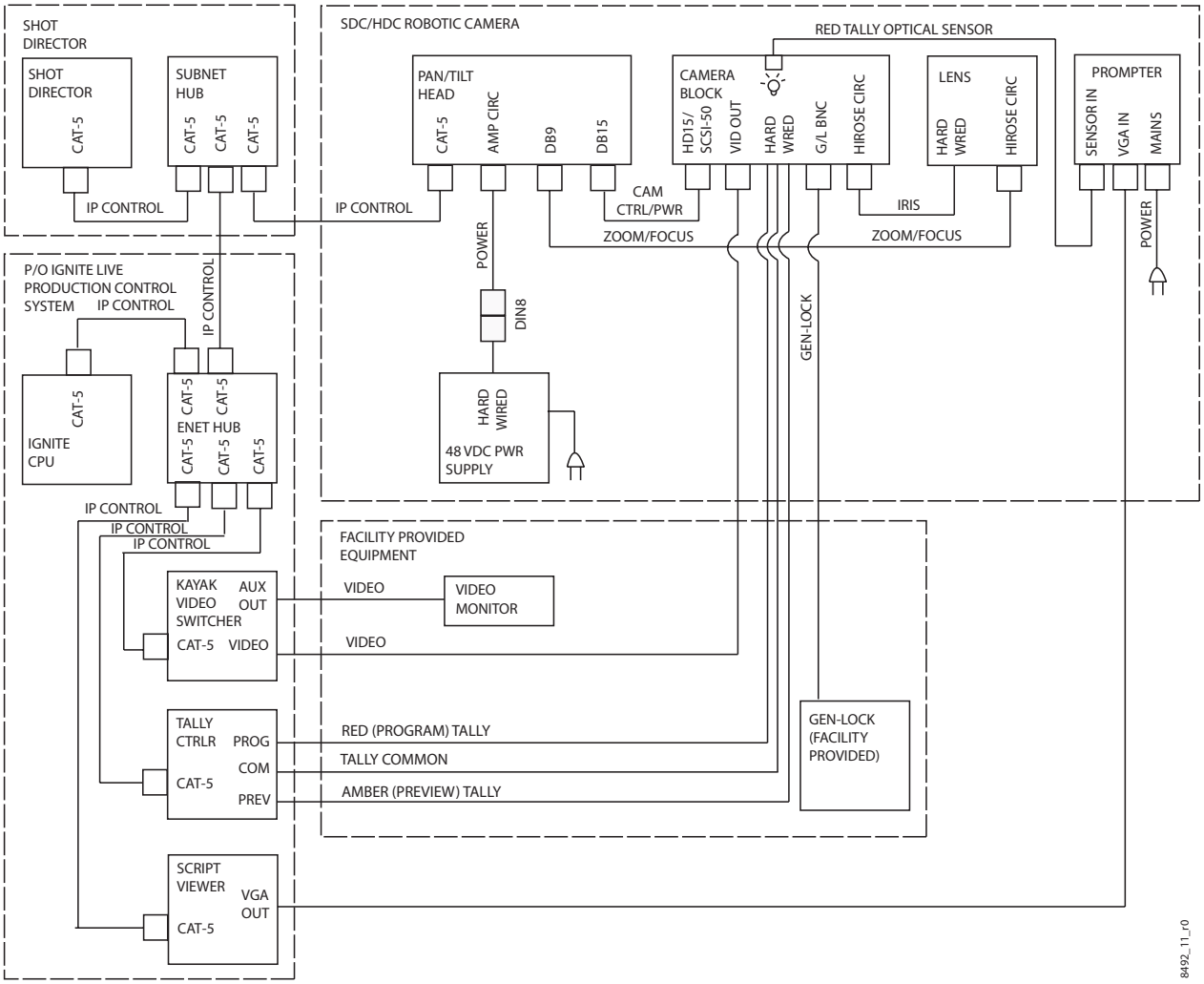
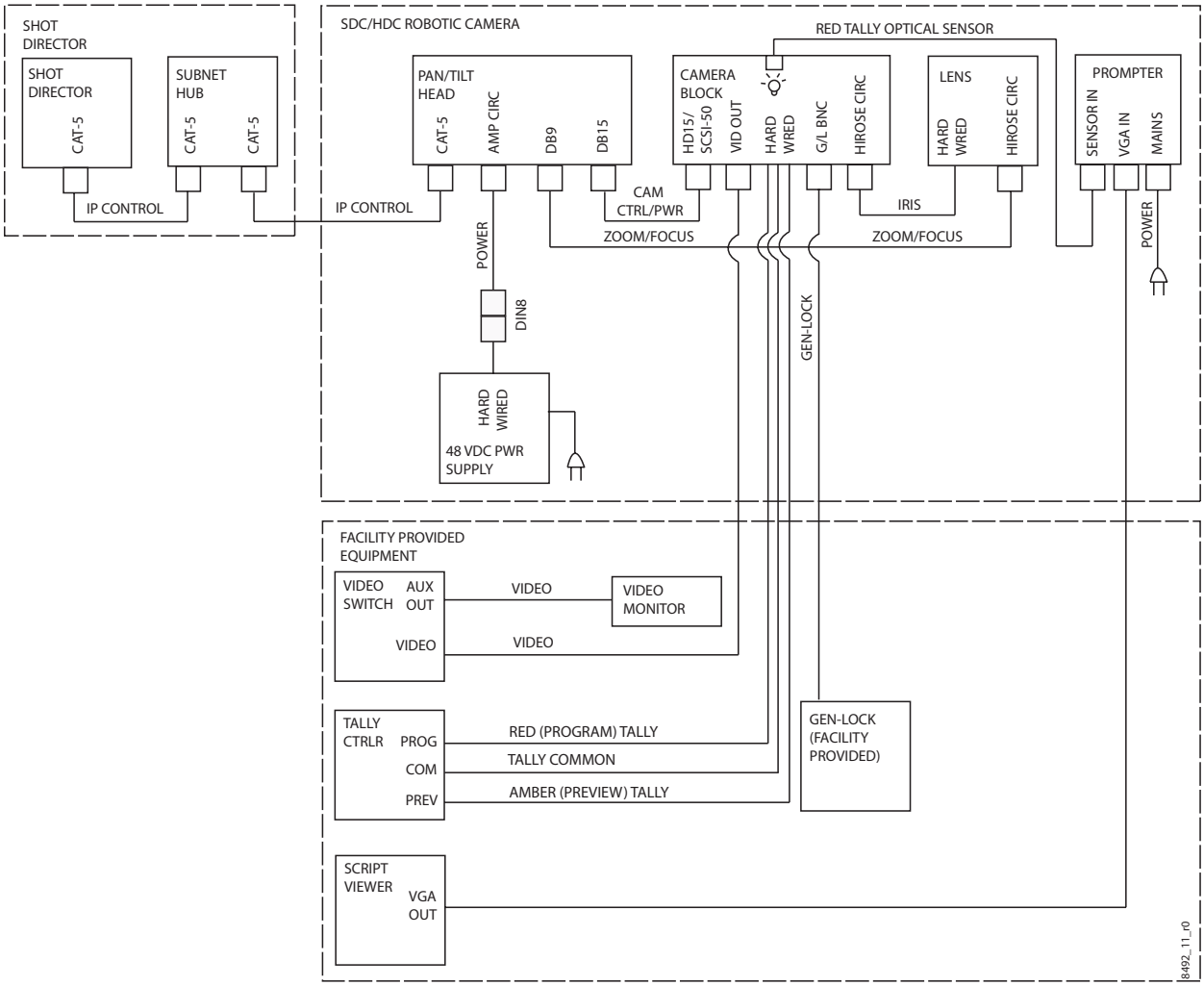


Figure 13. Interconnect (without Iignite System) Diagram



WARNING Ensure mains power is OFF before connecting or disconnecting any cables, cords, or wires.

Robotic Pan/Tilt Head

1. Connect a CAT-5 cable (not supplied) between the pan/tilt head assembly and the subnet hub.
2. Connect the zoom/focus cable hirose circular connector to the lens assembly and the DB-9 connector to the pan/tilt head.

Camera/Lens Assembly

1. Connect the camera control and power harness from the camera block to the pan/tilt head (DB15).

2. Connect an SDI video cable (not supplied) from the camera block to a studio monitor or video switcher (with studio monitor output).
3. If using a video switcher, connect genlock to the camera block.
4. Connect the Iris control cable from the lens assembly to the camera block.
5. Connect the unterminated tally wires from the camera block to a tally controller using 16AWG wire, or provide contact closure control. Tally control wiring should not exceed 200′ (60.96 m).

Prompter (Optional)

1. Connect a VGA video cable (not supplied) between the prompter and the script generator.
2. Attach the prompter tally optical sensor to the camera block tally light cover.

Power

1. Connect the 48 V dc power cord to the pan/tilt head assembly (Amphenol circular) and the 48 V dc power supply (DIN8). Then connect the power supply to Mains power.
2. Attach the Mains power cord to the prompter.

Section 3

Operation

Operating Procedure

1. Turn on all equipment power.

WARNING **Ensure personnel and obstacles are clear of the camera during power-up. The robotic head will automatically rotate to the preset zero degree pan and tilt location.**

Note The camera robotics may make some noise for the first few hours of operation. This is due to a special type of grease that will seat into the gears to provide long life lubrication of the mechanical components. The noise should abate soon after the camera is put into operation.

2. Adjust the camera.

   Use the SHOT Director to adjust the camera.

   Refer to the JSC-2300 SHOT Director Robotics/Camera Controller Instruction Manual for procedures and *Appendix A-SD (NTSC) Camera Block*, *Appendix B-SD (PAL) Camera Block*, or *Appendix C-HD Camera Block* for adjustment options.

   You should adjust the following items the first time the camera is used.

   a. Camera ID and IP address.

      The pan/tilt head and JSC-2300 SHOT Director are factory set to default IP addresses to allow the units to communicate initially. If you are connecting multiple cameras, you will need to set each camera to a unique ID and IP address using the JSC-2300 SHOT Director. Refer to *Appendix D-Robotic (Pan/Tilt Head)* for default and recommended IP addresses and camera IDs.

   b. White balance adjustment.

      This adjustment is needed when the camera is used for the first time, after leaving it unused for a long time, or when the lighting condition or brightness change.

Note After adjusting the white balance, re-adjustment is not needed under the same conditions.

c. Black balance adjustment.

This adjustment is needed when the camera is used for the first time, after being unused for a long time, or when the ambient temperature changes significantly (i.e. seasonal changes).

Note After adjusting the black balance, re-adjustment is not needed under the same conditions.

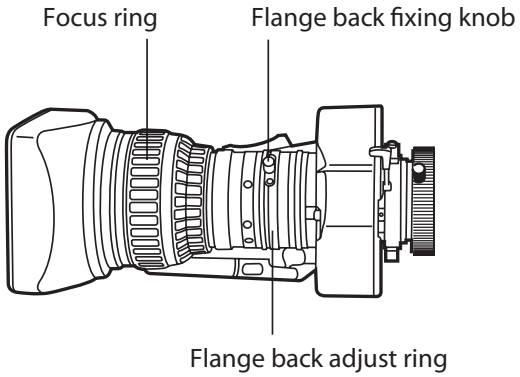
d. Flange back adjustment for zoom lens

This adjustment is used to set the focus range of the zoom lens from maximum (telephoto) to wide angle.

Note This adjustment is performed at the factory and will typically not need to be performed in the field, unless it is necessary to change the lens.

- Fully open the iris by shooting a dark object from a distance of at least 6.6 ft (2 m).
- Loosen the flange back fixing knob.

Figure 14. Zoom Lens Adjustments



- Set the lens to maximum zoom and adjust the focus by turning the focus ring.
- Set the lens to widest angle and adjust the focus by turning the flange back adjust ring.
- Repeat adjustment of focus ring and flang back adjust ring until the focus is adjusted through the entire zoom range.
- Tighten the flange back fixing knob.

e. Gen-lock adjustment.

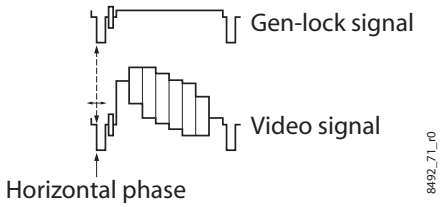
When multiple cameras are used, or the camera is combined with other equipment, do the following.

- Connect an external gen-lock synchronization signal (black burst output) to the camera G/L input.

Note The HDC camera accepts SD and HD synchronizing signals. HD synchronizing signals may require different test equipment and may display differently than signals shown in Figure 15.

- Using a two-channel oscilloscope, observe the gen-lock input and camera video output waveforms.
- Match the horizontal phases of the gen-lock in and video out signals (Figure 15), by adjusting the camera H-Phase setting of the GEN-LOCK or G/L menu.

Figure 15. Gen-Lock Horizontal Phase Adjustment Waveform



3. Adjust the lighting for the object.
4. Start shooting.
   - Refer to the Ignite Live Production Control System User Manual for automated camera control procedures.
   - Refer to the JSC-2300 SHOT Director Robotics/Camera Controller Instruction Manual if you want to:
     - Control the camera manually
     - Create and save presets
     - Change camera settings
5. After shooting, turn off all equipment power.

Section 4

Service

General

Ignite SDC/HDC robotic cameras contain no user-serviceable parts. Refer any servicing to qualified service personnel.

Troubleshooting

Should problems occur with the Ignite SDC/HDC robotic camera, please refer to the following troubleshooting matrix (Table 2). If questions or problems still exist after troubleshooting, please contact your authorized Grass Valley reseller or contact Grass Valley Customer Support directly. (See *Contacting Grass Valley* on page 4.).

Table 2. Troubleshooting (Problem/Cause/Solution) Matrix

Problem	Cause	Solution
Power	Mains power OFF.	Energize Mains power
	Power supply not connected to Mains	Connect power supply to Mains
	Power supply failure	If power supply LED is NOT illuminated, replace the power supply.
	Power supply not connected to pan/tilt head.	Ensure power supply is properly connected to the pan/tilt head amphenol circular connector.
	Pan/tilt head failure.	Use the SHOT Director to pan/tilt the camera.
		If the pan/tilt head responds properly, continue to the next possible cause.
		If the pan/tilt head does not respond, replace the pan/tilt head.
	Pan/tilt head not connected to camera block.	Ensure the DB15 connector on the pan/tilt head is connected to the HD15 or SCSI-50 connector on the camera block.
	Camera block failure.	If the camera block POWER LED is not illuminated, replace the camera/lens assembly.
Communication	No power to SHOT Director, network hub, pan/tilt head, or camera.	Ensure all devices are powered.

Table 2. Troubleshooting (Problem/Cause/Solution) Matrix

Problem	Cause	Solution
	SHOT Director or hub communication failure. No traffic indicated on the network hub front panel LEDs.	Ensure all devices are powered. Check CAT5 cable between SHOT Director and hub. Use crossover cable between SHOT Director and pan/tilt head (no hub). Troubleshoot SHOT Director and/or hub. (Refer to JSC-2300 SHOT Director Robotics Controller Instruction Manual).
	Pan/tilt head communication failure.	Ensure all devices are powered, Verify that pan/tilt head does not respond to pan, tilt, zoom, or focus commands, Verify traffic indicated on network hub front panel LEDs Check CAT5 cable between hub and pan/tilt head. Verify correct IP address setup for pan/tilt head and SHOT Director (Refer to JSC-2300 SHOT Director Robotics Controller Instruction Manual).
	CAUTION Contact Customer Service before pressing the RESET switch on the pan/tilt head.	
		Press the pan/tilt head RESET switch (Item 2, Figure 74 on page 107) to set the pan/tilt factory default IP address (192.168.0.126) and subnet mask (255.255.255.0). Then set the SHOT Director to default address 192.168.0.100 (Refer to JSC-2300 SHOT Director Robotics Controller Instruction Manual). Replace pan/tilt head.
	Camera block communication failure.	Ensure the DB15 connector on the pan/tilt head is connected to the HD15 or SCSI-50 connector on the camera block. (HDC Only). Access the Setting menu using the menu switch on the back of the HD camera block (*Appendix C-HD Camera Block*). Ensure that the protocol is set to 4. Replace camera/lens assembly.
Robotics	Pan/tilt head will not pan, tilt or both.	Verify that the pan/tilt head searches for home (zero pan and zero tilt) at power up. Replace pan/tilt head.
Video	No video	Check video cable connected to back of camera block. Replace camera/lens assembly.

Table 2. Troubleshooting (Problem/Cause/Solution) Matrix

Problem	Cause	Solution
	Poor quality video	Check video cable connected to back of camera block. Ensure DB9 connector at pan/tilt head is connected and that the zoom/focus cable is connected to the lens assembly. Ensure the Iris cable from the lens assembly is connected to the hirose circular connector at the back of the camera block. Use the SHOT Director to access the camera Settings menu and verify all menu selections. Refer to the JSC-2300 SHOT Director Robotics Controller Instruction Manual and *Appendix A-SD (NTSC) Camera Block*, *Appendix B-SD (PAL) Camera Block*, or *Appendix C-HD Camera Block*. Replace camera/lens assembly.
Tally	Tally does not illuminate	Ensure the tally light is properly connect to a tally controller. Replace camera/lens assembly.

Appendix A

SD (NTSC) Camera Block

Controls and Indicators

SD (NTSC) camera controls and indicators are shown in Figure 16 and described in Table 3.

Figure 16. SD Camera Controls and Indicators

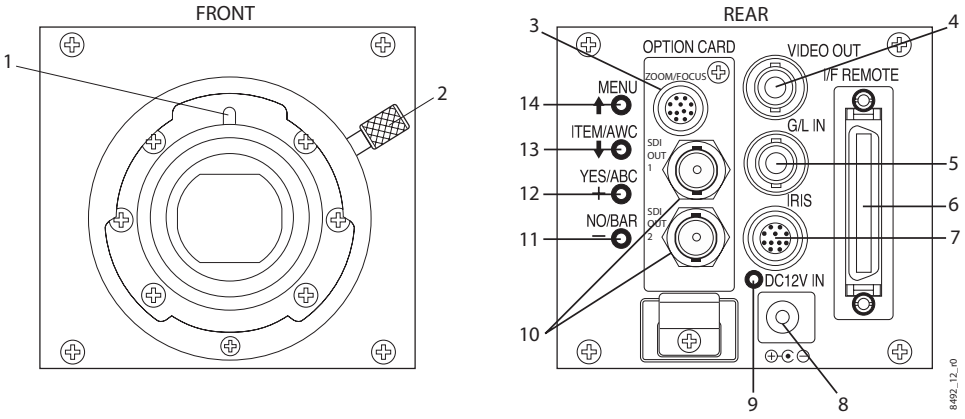


Table 3. SD Camera Controls and Indicators

Item	Name	Description
1	Lens mount	2/3" Standard bayonet type (B4) mount.
2	Lens fixing ring knob	Rotate the lens fixing ring knob counterclockwise and remove the lens mount cap. Mount the lens on the camera and rotate the lens fixing ring knob clockwise in order to fix the lens securely.
3	Zoom/Focus connector	Not Used.
4	Video Output connector (VIDEO OUT)	Composite video output.
5	G/L Input connector (G/L IN)	Gen-lock input.
6	I/F Remote connector (I/F REMOTE)	Input terminal dedicated to control signals from an optional remote control box.
7	Iris connector (IRIS)	Input terminal for lens with an iris control function.
8	DC 12 V input connector (DC 12V IN)	12 V dc input.
9	Power indicator	Red LED lamp lights when DC power is supplied to the camera.

Table 3. SD Camera Controls and Indicators

Item	Name	Description
10	SDI OUT 1 and 2	SDI video outputs (SDI Option card)
11	NO/BAR switch (NO/BAR/–)	When the camera is in shooting mode (menu not displayed), the color bar and shooting conditions are alternately indicated by pressing the switch. With the Main Menu displayed, you can scroll down to any Sub Menu. With a Sub Menu displayed, you can reduce the value of any setting.
12	YES/ABC switch (YES/ABC/+)	When the camera is in shooting mode (menu not displayed), the automatic black balance control can be set with this switch. With the Main Menu displayed, you can scroll up to any Sub Menu. With a Sub Menu displayed, you can increase the value of any setting.
13	ITEM/AWC switch (ITEM/AWC/S)	When the camera is in shooting mode (menu not displayed), the automatic white balance control can be set with this switch. With a menu displayed, any item can be selected by pressing this switch.
14	MENU switch (MENU/A)	A menu will appear on the monitor screen when this switch is pressed for about 5 seconds. This item can be selected by pressing the switch while the menu is on the screen.
15	Tally light (located on top of camera body, but not illustrated)	Dual-color LED Red - On Air Amber - Next Camera Requires dry contact tally control

Menu Selections

You can adjust camera settings via on-screen menus by using the controls on the back of the camera block or by using the JSC-2300 SHOT Director robotics/camera controller. These adjustments should be performed by qualified technical personnel only. If your system includes a JSC-2300 SHOT Director, always use the JSC-2300 SHOT Director LCD menus to make these adjustments.

Use Mode Setting

The camera has four use modes, and various functions for four use modes have been preset. Functions can be set as best suited to each use mode.

Note Cameras come from the factory set in User Mode, which allows the greatest flexibility of settings. Other modes have many of the settings pre-determined which may or may not work in a particular application.

Halogen mode

Suited to indoor shooting, such as at weddings, parties, lecture meetings, events, etc. Settings can be changed using a simple menu.

Fluorescent mode

Suited to indoor shooting under fluorescent lighting. Settings can be changed using a simple menu.

Outdoor mode

Suited to outdoor shooting. Settings can be changed using a simple menu.

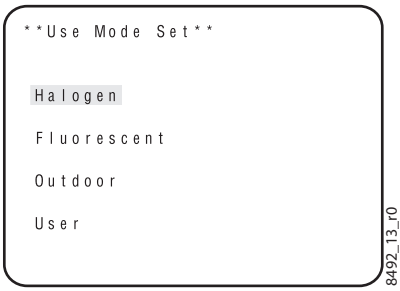
User mode

Settings can be changed using a detail menu.

Setting by Camera

1. Turn the camera on while keeping the MENU switch (Figure 16) depressed.
2. The use mode setting menu (Figure 17) appears on the monitor screen and one of the use mode blinks .

Figure 17. Use Mode Setting Menu



3. Press the MENU switch, ITEM/AWC switch, or NO/BAR switch to let the desired use mode blink.

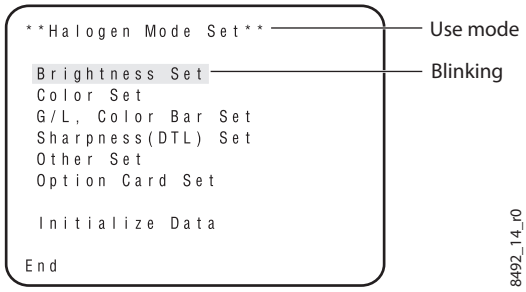
- MENU switch: The blinking item moves up one.
- ITEM/AWC switch, NO/BAR switch: The blinking item moves down one.

4. Press the YES/ABC switch. The blinking use mode comes into effect. After the use mode setting menu is shown for about 5 seconds, the camera returns to ready and operates in the selected use mode.

Menu Item Setting

Each of the four use modes of the camera has a main menu (example shown in Figure 18).

Figure 18. Main Menu - Halogen, Fluorescent, Outdoor Mode



- Each item of the main menu has a submenu, which consists of several settings.
- These settings have been preset to the optimum values to suit each use mode, and can be changed to suit actual shooting conditions.

1. Keep the MENU switch depressed for 5 seconds or more. The main menu appears on the monitor screen.
2. Each time the MENU switch, ITEM/AWC switch, or NO/BAR switch is pressed, the blinking item moves up or down.
3. When the YES/ABC switch is pressed after selecting the desired item to blink, the submenu for the selected item appears on the screen.
4. Select the desired item to be changed in its settings using the MENU switch and ITEM/AWC switch.
5. Press the YES/ABC switch or NO/BAR switch to change the settings.
6. Select [Return] using the MENU switch and ITEM/AWC, then press the YES/ABC switch to return to the main menu.
7. After changing the settings, take the following steps. Select [End] using the MENU switch and ITEM/AWC switch and press the YES/ABC switch.

Changing the Language Setting

The language on the menu screen can be changed from English to Japanese. (Factory setting: English)

- Halogen, Fluorescent, Outdoor Mode – Select Japanese in the Language setting in Other Set submenu.
- Use Mode – Select Japanese in the Language setting in Other Set2 submenu.

Submenus Overview

The following submenus are for Halogen Mode, Fluorescent Mode, and Outdoor Mode on the NTSC version of the SD camera.

For User Mode submenus, refer to *User Mode Submenus Overview* on page 50.

Brightness Setting

Figure 19. Brightness Setting Submenu

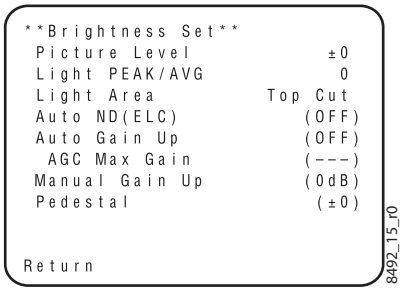


Table 4. Brightness Settings

Selection	Description
Picture Level	(-50 to +50) Convergence level of AUTO IRIS/AUTO GAIN UP/ AUTO ND (ELC) can be adjusted.
Light PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AUTO GAIN up/AUTO ND (ELC) detected peak to average can be adjusted within a predetermined range.
Light Area	A photometric measurement method can be selected for AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC). ALL: All the screen area is measured. Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top Cut: About one-third of the top part of the screen is excluded from measurement. BTM Cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L Cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto ND (ELC)	OFF: Luminance is not automatically adjusted by the electronic shutter. ON: The electronic shutter is controlled to automatically adjust the luminance. *ON is automatically selected when the Shutter Speed on the submenu [Other Set] is set to [Auto ND]. OFF is selected when other than [Auto ND] is selected.
Auto Gain Up	OFF: The light quantity is not adjusted automatically. ON: The light quantity is adjusted automatically. The maximum to which the gain can be increased using the Auto Gain Up function is selected by the AGC Max Gain setting.
AGC Max Gain	(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum amount to which the gain can be increased when “ON” has been selected as the Auto Gain Up setting.

Table 4. Brightness Settings

Selection	Description
Manu Gain Up	Manual setting is possible only when the Auto Gain Up setting is "OFF". 0 dB: 0 dB should be selected in normal cases. 1 dB - 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes. N/Eye L (Night Eye L): Use this mode if sufficient video output can not be obtained even if 30 dB gain up should be selected. N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.

Color Setting

Figure 20. Color Setting Submenu

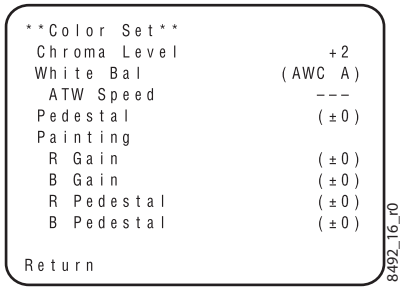


Table 5. Color Settings

Selection	Description
Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to any of three levels each.
Flesh Tone	(-3 to +3) Skin color can be decreased or increased to any of three levels each.
White Bal	ATW: The white balance is automatically adjusted to be always right. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in user mode. P SET 3200 K: The white balance is adjusted to 3200 K illumination. P SET 5600 K: The white balance is adjusted to 5600 K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.

G/L, Color Bar Setting

Figure 21. GL, Color Bar Setting Submenu

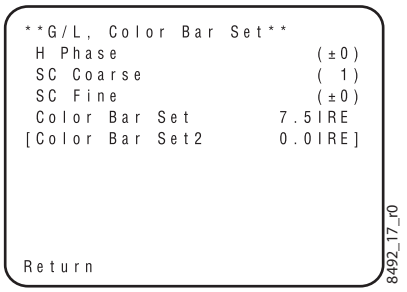


Table 6. Color Bar Settings

Selection	Description
H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of sub carrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of sub carrier phase can be made when a genlock signal is supplied.
Color Bar Set	(0.0 IRE, 7.5 IRE) The setup level of color bar can be adjusted.
Color Bar Set2	(0.0 IRE, 7.5 IRE) Set 0.0 IRE for the SDI card.

Sharpness (DTL) Setting Overview

Figure 22. Sharpness (DTL) Settings Submenu

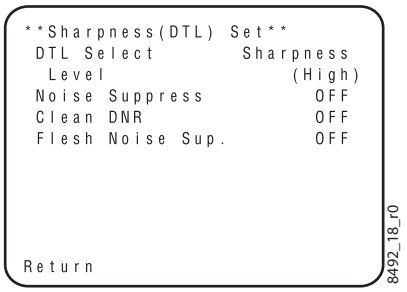


Table 7. Sharpness (DTL) Settings

Selection	Description
DTL Select	(Sharpness, Super DTL) If contour correction is not sufficient at the Sharpness position when Detail Level setting is set to Low or High, select the Super DTL position. *Neither Sharpness nor Super DTL is valid for contour correction if Detail Level setting is in the OFF position.
Level	(OFF, Low, High) Detail level can be adjusted when Detail Select setting is at Sharpness. Super DTL level can be adjusted when it is at Super DTL.
Noise Suppress	(OFF, Low, High) Screen noise can be reduced when Detail Level setting is at High or Low.

Table 7. Sharpness (DTL) Settings

Selection	Description
Clean DNR	(OFF, Low, High) This enables the clean DNR effect to be selected.
Flesh Noise Sup.	(OFF, Low, High) Flesh noise is suppressed in two steps when the Level setting is at High or Low.

Other Settings Overview

Figure 23. Other Settings Submenu

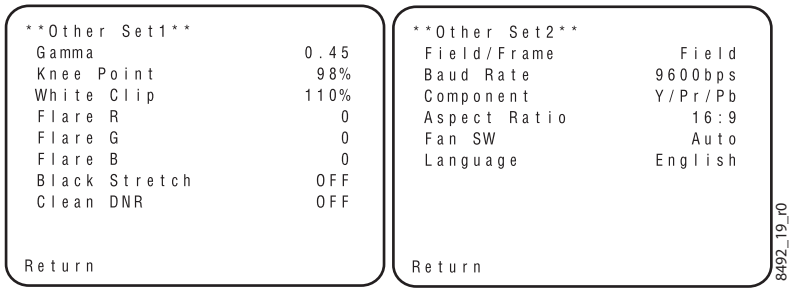


Table 8. Other Settings

Selection	Description
Contrast (Gamma)	(Low, Mid, High) Contrast can be adjusted to any of three levels.
Shutter Speed	OFF: Electronic shutter is turned off. 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected. S/Scan (Synchro Scan): Electronic shutter operates at the speed set with the Synchro Scan setting. Auto ND: Electronic shutter is controlled to automatically adjust the luminance. *Flickering may increase at Auto ND under fluorescent lights. *Auto ND is automatically selected if Auto ND (ELC) setting is set to ON.

Table 8. Other Settings

<table>
<tr><th>Selection</th><th>Description</th></tr>
<tr><td>Synchro Scan</td><td>(60.34 Hz to 15.75 kHz) This setting is possible only when the Shutter Speed setting is at S/Scan.
Horizontal bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example.
*For luminance settings at each shutter speed and synchro-scan shutter speed, refer to the following table.
<table>
<tr><th>Shutter Speed</th><th>Synchro Scan</th><th>Required Luminance Ratio</th></tr>
<tr><td>OFF</td><td>-</td><td>1</td></tr>
<tr><td>1/100</td><td>100.3 Hz</td><td>2</td></tr>
<tr><td>1/250</td><td>250.0 Hz</td><td>4</td></tr>
<tr><td>1/500</td><td>492.2 Hz</td><td>8</td></tr>
<tr><td>1/1000</td><td>984.4 Hz</td><td>16</td></tr>
<tr><td>1/2000</td><td>1.969 kHz</td><td>32</td></tr>
<tr><td>1/4000</td><td>3.938 kHz</td><td>64</td></tr>
<tr><td>1/10000</td><td>7.875 kHz</td><td>160</td></tr>
</table></td></tr>
<tr><td>V Resolution</td><td>Normal: Normal image. (CCD storage will be by field storage. Recommended for general use because sensitivity will decrease at the Fine setting.

Fine: Vertical resolution increases. (Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.)</td></tr>
<tr><td>Baud Rate</td><td>(1200bps, 2400bps, 4800bps, 9600bps)
Select a communication speed in controlling the camera from the computer.</td></tr>
<tr><td>Component</td><td>This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.</td></tr>
<tr><td>Aspect Ratio</td><td>Aspect ratio can be selected from 16:9 or 4:3.</td></tr>
<tr><td>Fan SW</td><td>OFF: Select this setting to stop the fan when its operating sound is found to be bothersome in a studio or other such environment.
Auto: The temperature is detected automatically, and the fan starts operating when the temperature exceeds approx. 95 °F (35 °C). Under normal circumstances, the “Auto” setting is used.</td></tr>
<tr><td>Language</td><td>English: Menu screen is displayed in English.Japanese: Menu screen is displayed in Japanese.</td></tr>
</table>

User Mode Submenus Overview

Iris, Shutter, Gain Settings Overview

Figure 24. Iris, Shutter, Gain Settings Submenu

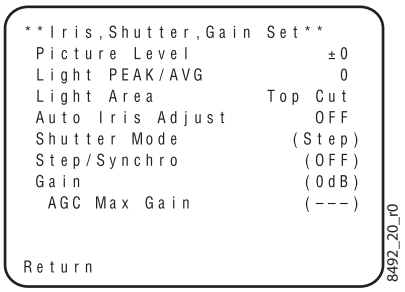


Table 9. Iris, Shutter, Gain Settings

Selection	Description
Picture Level	(-50 to +50) Convergence level of AUTO IRIS, AUTO GAIN UP, ELC can be adjusted.
Light PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS, AUTO GAIN UP, ELC detected peak to average can be adjusted within a range.
Light Area	A photometric measurement method can be selected for AUTO IRIS, AUTO GAIN UP, ELC. All: All the screen is measured. Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top cut: About one-third of the top portion of the screen is excluded from measurement. BTM cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto Iris Adjust	(ON, OFF)
Shutter Mode	Step: Electronic shutter operates at the speed selected by the Step/Synchro setting. S/Scan (Synchro Scan): Electronic shutter operates at the speed selected in Step/Synchro setting. ELC: Electronic shutter is controlled to automatically adjust the luminance. *If Frame 1 is selected in Field/Frame setting, Shutter Mode setting cannot be added.

Table 9. Iris, Shutter, Gain Settings

<table>
<tr><th>Selection</th><td>Description</td></tr>
<tr><td>Step/Synchro</td><td>This setting is possible only when Step or Synchro Scan is selected in Shutter Mode setting.
When “Step” has been selected as the Shutter Mode setting:
OFF: Electronic shutter is turned off.
1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected.
When “Synchro Scan” has been selected as the Shutter Mode setting:
60.34 Hz to 15.75 kHz: Bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example.
*For luminance setting at each shutter speed and synchro-scan shutter speed, refer to the table below.
<table>
<tr><th>Shutter Speed</th><th>Synchro Scan</th><th>Required Luminance Ratio</th></tr>
<tr><td>OFF</td><td>-</td><td>1</td></tr>
<tr><td>1/100</td><td>100.3 Hz</td><td>2</td></tr>
<tr><td>1/250</td><td>250.0 Hz</td><td>4</td></tr>
<tr><td>1/500</td><td>492.2 Hz</td><td>8</td></tr>
<tr><td>1/1000</td><td>984.4 Hz</td><td>16</td></tr>
<tr><td>1/2000</td><td>1.969 kHz</td><td>32</td></tr>
<tr><td>1/4000</td><td>3.938 kHz</td><td>64</td></tr>
<tr><td>1/10000</td><td>7.875 kHz</td><td>160</td></tr>
</table></td></tr>
<tr><td>Gain</td><td>Auto: The light quantity is adjusted automatically.
0 dB: 0dB should be selected in normal cases.
1 dB to 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes.
N/Eye L (Night Eye L): Use this mode if sufficient video output cannot obtained even if 30 dB gain up should be selected.
N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.</td></tr>
<tr><td>AGC Max Gain</td><td>(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum gain up when “Auto” has been selected as the gain setting.</td></tr>
</table>

Color Settings

Figure 25. Color Settings Submenu

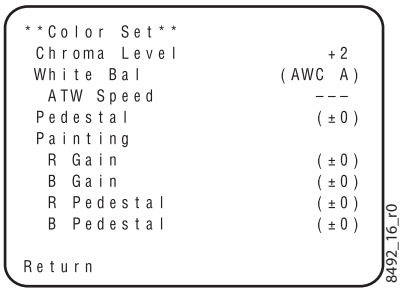


Table 10. Color Settings

Selection	Description
Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to three levels.
White Bal	ATW: The white balance is automatically adjusted to the optimum position. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in User Mode. 3200K: The white balance is adjusted to 3200K illumination. 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.
Painting	(-150 to +150) R Gain, B Gain: Fine adjustment of the white balance can be made after AWC setting when AWC A or AWC B is selected in White Balance Setting. The set value returns to ±0 after AWC setting in using the camera alone. R Pedestal, B Pedestal: Fine adjustment of the black balance can be made after ABC setting. The set value returns to ±0 after ABC setting in using the camera alone.

G/L, Color Bar Settings

Figure 26. G/L Color Bar Setting Submenu

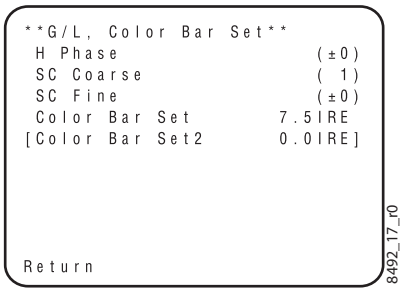


Table 11. G/L Color Bar Settings

Selection	Description
H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of sub carrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of sub carrier phase can be made when a genlock signal is supplied.
Color Bar Set	(0.0 IRE, 7.5 IRE) The setup level of color bar can be adjusted.
Color Bar Set2	(0.0 IRE, 7.5 IRE) Set to 0.0 IRE for the SDI card.

Detail Settings

Figure 27. Detail Setting Submenu

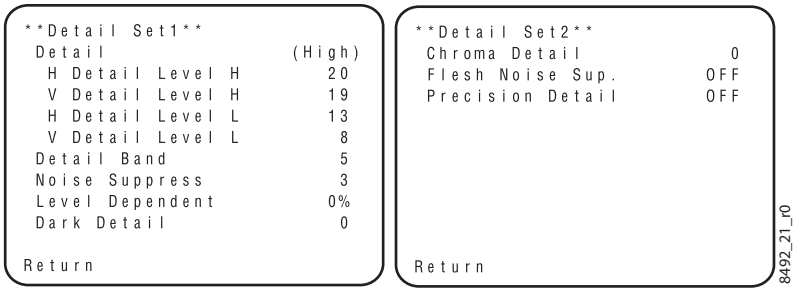


Table 12. Detail Settings

Selection	Description
Detail	(OFF, Low, High) Contour correction quantity can be selected. Detail settings made using the Horizontal/Vertical Detail Level High/Low setting. Detail level can be set in horizontal (H) and vertical (V) directions with the Detail setting at High or Low. Whichever the direction, H or V, the set level at High must be at least one position higher than that at Low.
H Detail Level H	(L+1 to +63)
V Detail Level H	(L+1 to +31)

Table 12. Detail Settings

Selection	Description
H Detail Level L	(0 to H-1)
V Detail Level L	(0 to H-1)
Detail Band	(1 to 5) A contour correction band can be set with the Detail setting at High or Low. The higher setting, the finer will be the detail.
Noise Suppress	(1 to 10) Screen noise can be reduced with the Detail setting at High or Low. If the noise suppress compensation level is set too high, a fine object will be reproduced less sharply.
Level Dependent	(0% to 25%) Screen noise due to the detail of dark parts of an object can be reduced. If the Level Dependent setting is set too high, however, hair, for example, will be reproduced less sharply.
Dark Detail	(0 to 5) The contours of the darker portions of an object can be emphasized. This setting is possible only when the Level Dependent setting is set to 0%.
Chroma Detail	(0 to 15) The contours of high-hue portions of an object can be emphasized.
Flesh Noise Sup.	(OFF, Low, High) Flesh noise is suppressed in two steps when the Detail setting is at High or Low.
Precision Detail	(OFF, Low, High) This setting is to narrow detail width and suppress detail glare.

Color Matrix Settings

Figure 28. Color Matrix Setting Submenu

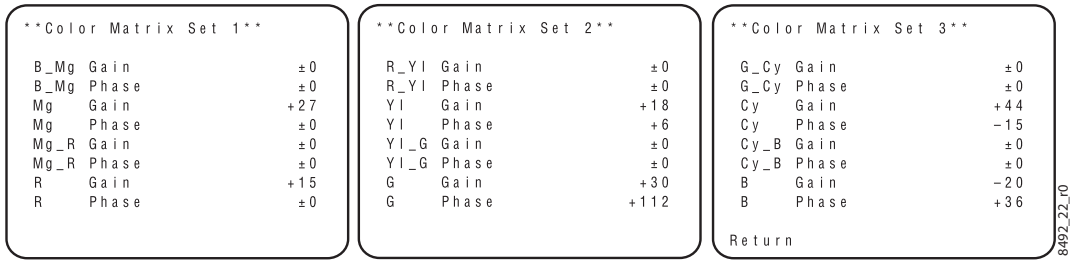


Table 13. Color matrix Settings

Selection	Description
B_Mg Gain	Increases or decreases the hue of the intermediate color between blue and magenta.
B_Mg Phase	Varies the hue of the intermediate color between blue and magenta.
Mg Gain	Increases or decreases the magenta.
Mg Phase	Varies the hue of the magenta.
Mg_R Gain	Increases or decreases the intermediate color between magenta and red.
Mg_R Phase	Varies the hue of the intermediate color between magenta and red.
R Gain	Increases or decreases the red.
R Phase	Varies the hue of the red.
R_Yl Gain	Increases or decreases the intermediate color between red and yellow.
R_Yl Phase	Varies the hue of the intermediate color between red and yellow
Yl Gain	Increases or decreases the intermediate color of yellow.

Table 13. Color matrix Settings

Selection	Description
YI Phase	Varies the hue of the yellow.
YI_G Gain	Increases or decreases the intermediate color between yellow and green.
YI_G Phase	Varies the hue of the intermediate color between yellow and green.
G Gain	Increases or decreases the green.
G Phase	Varies the hue of the green.
G_Cy Gain	Increases or decreases the intermediate color between green and cyan.
G_Cy Phase	Varies the hue of the intermediate color between green and cyan.
Cy Gain	Increases or decreases the cyan.
Cy Phase	Varies the hue of the cyan.
Cy_B Gain	Increases or decreases the intermediate color between cyan and blue.
Cy_B Phase	Varies the hue of the intermediate color between cyan and blue.
B Gain	Increase or decreases the intermediate color between blue and magenta.
B Phase	Varies the hue of the intermediate color between blue and magenta.

Other Settings

Figure 29. Other Settings Submenu

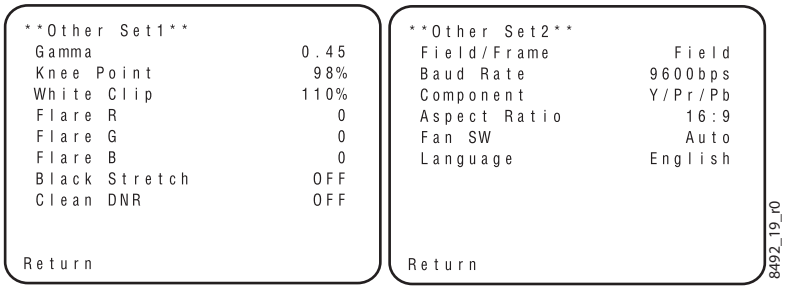


Table 14. Other Settings

Selection	Description
Gamma	(0.35 to 0.55) Gamma correction level can be set.
Knee Point	88% to 98%: The level of video signals subject to knee (knee point) can be set. Dynamic: Knee level is automatically adjusted according to the scene.
White Clip	(95% to 110%) The peak level of video signals to be white-clipped can be set.
Flare R/G/B	(0 to 100) Flare correction level can be adjusted.
Black Stretch	Black stretch to correct the suppression of black portions at low luminance can be set to ON or OFF.
Clean DNR	(OFF, Low, High) This enables the clean DNR effect to be selected.
Field/Frame	Field: CCD storage will be by field storage. Frame 1: Vertical resolution increases in frame storage. Frame 2: Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) This setting is to select a communication speed in controlling the camera from the computer.
Component	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.

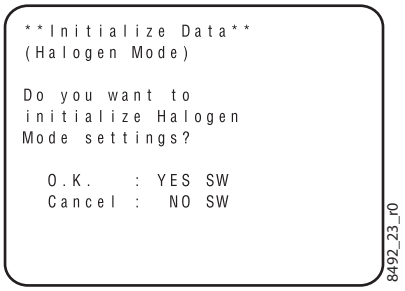
Table 14. Other Settings

Selection	Description
Aspect Ratio	Aspect ratio can be selected from 16:9 or 4:3.
Fan SW	OFF: Select this setting to stop the fan when its operating sound is found to be bothersome in a studio or other such environment. Auto: The temperature is detected automatically, and the fan starts operating when the temperature exceeds approx. 95 °F (35 °C)
Language	English: Menu screen is displayed in English. Japanese: Menu screen is displayed in Japanese.

to Return to Initial Settings

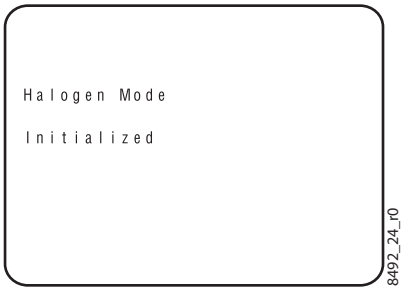
1. Select [Initialize Data] on the main menu screen of each Use Mode. Press the YES/ABC switch, then the [Initialize Data] screen (Figure 30) shows for about 10 seconds.

Figure 30. Initialize Data Screen



2. Press the YES/ABC switch within about 10 seconds to return to the initial settings (Table 15 and Table 16), the existing settings are initialized (Figure 31), and the camera returns to main menu

Figure 31. Data Initialized Screen



3. If the NO/BAR switch is pressed, or if the YES/ABC switch is not pressed, within about 10 seconds (Figure 32), and the camera returns to main menu, then the existing settings are not initialized.

Figure 32. Data Unchanged Screen

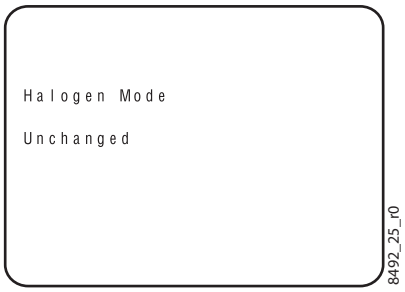


Table 15. Factory preset values for Halogen Mode, Fluorescent Mode, and Outdoor Mode

	Item	Halogen mode	Fluorescent mode	Outdoor mode
Brightness Set	Picture Level Light PEAK/AVG Light Area Auto ND (ELC) Auto Gain Up AGC Max Gain Manu Gain Up Pedestal	±0 0 Top cut OFF OFF --- 0 dB ±0	±0 0 Top cut OFF OFF --- 0dB ±0	±0 0 Top cut ON ON N/Eye H --- -40
Color Set	Chroma Level Flesh Tone White Bal ATW Speed	±0 ±0 AWC A ---	±0 ±0 AWC A ---	±0 ±0 ATW Mid
G/L, Color Bar Set	H Phase SC Coarse SC Fine Color Bar Set Color Bar Set 2	±0 1 ±0 7.5 IRE 0.0 IRE	±0 1 ±0 7.5 IRE 0.0 IRE	±0 1 ±0 7.5 IRE 0.0 IRE
Sharpness (DTL) Set	DTL Select Level Noise Suppress Clean DNR Flesh Noise Sup.	Sharpness HIGH OFF OFF OFF	Sharpness HIGH OFF OFF OFF	Sharpness HIGH OFF OFF OFF
Other Set	Contrast (Gamma) Shutter Speed Synchro Scan V Resolution Baud Rate Component Aspect Ratio Fan SW Language	Mid OFF --- Normal 9600 bps Y/Pr/Pb 16:9 Auto (English)	Mid OFF --- Normal 9600 bps Y/Pr/Pb 16:9 Auto (English)	Mid Auto ND --- Normal 9600 bps Y/Pr/Pb 16:9 Auto (English)

Table 16. Factory preset values for User Mode

	Item	User mode
Iris, Shutter, Gain Set	Picture Level Light PEAK/AVG Light Area Auto Iris Adjust Shutter Mode Step/Synchro Gain AGC Max Gain	±0 0 Top cut OFF Step OFF 0 dB ---
Color Set	Chroma Level White Bal ATW Speed Pedestal Painting: R Gain B Gain R Pedestal B Pedestal	+2 AWC A --- ±0 ±0 ±0 ±0 ±0
G/L, Color Bar Set	H Phase SC Coarse SC Fine Color Bar Set Color Bar Set2	±0 1 ±0 7.5 IRE 0.0 IRE
Detail Set 1	Detail H Detail Level H V Detail Level H H Detail Level L V Detail Level L Detail Band Noise Suppress Level Dependent Dark Detail	High 20 19 13 8 5 3 0% 0
Detail Set 2	Chroma Detail Flesh Noise Suppress Precision Detail	0 OFF OFF
Color Matrix Set 1	B_Mg Gain B_Mg Phase Mg Gain Mg Phase Mg_R Gain Mg_R Phase R Gain R Phase	±0 ±0 +27 ±0 ±0 ±0 +15 ±0
Color Matrix Set 2	R_Yl Gain R_Yl Phase Yl Gain Yl Phase Yl_G Gain Yl_G Phase G Gain G Phase	±0 ±0 +18 +6 ±0 ±0 +30 +112
Color Matrix Set 3	G_Cy Gain G_Cy Phase Cy Gain Cy Phase Cy_B Gain Cy_B Phase B Gain B Phase	±0 ±0 +44 -15 ±0 ±0 -20 +36

Table 16. Factory preset values for User Mode

	Item	User mode
Other Set 1	Gamma Knee Point White Clip Flare R Flare G Flare B Black Stretch Clean DNR	0.45 88% 110% 0 0 0 OFF OFF
Other Set 2	Field/Frame Baud Rate Component Aspect Ratio Fan SW Language	Field 9600 bps Y/Pr/Pb 16:9 Auto (English)

Specifications

SD camera specifications are listed in Table 17.

Table 17. SD Camera Specifications

Power Requirements	12 Vdc 15 W
Optical System	2/3" Prism optical system, F1.4
Pickup Device	2/3" Interline wide CCD
Total Pixels	1020 (H)x505 (V) (About 510000 pixels)
Scanning System	525 lines, 60 fields, 30 flames
SYNC System	Internal: EIA standard External: BBS or VBS (BNCx1, Dsub 50 Px1)
Video Output	Composite: 1.0 Vp-p/75 Ohm (BNCx1, Dsub 50 Px1) Y/C Y: 1.0 Vp-p/75 Ohm; C: 0.286 Vp-p/75 Ohm (burst) (Dsub 50 Px1) Y/Pr/Pb Y: 1.0 Vp-p/75 Ohm; Pr, Pb: 0.7 Vp-p/75 Ohm (Dsub 50 Px1) RGB G: 1.0 Vp-p/75 Ohm; RB: 0.7 Vp-p/75 Ohm (Dsub 50 Px1)
Std Illumination Color Temp	2,000 lx (F11, 3200K)
Minimum Illumination	0.4 lx (F1.7, Night Eye H)
S/N Ratio	65 dB (Y signal, DTL OFF, gamma OFF, DNR ON)
Horizontal Resolution	850 TV lines (high band DTL ON, center area)
Registration	0.05% (Entire screen, excluding effects of lens)
Aspect Ratio Conversion	16:9, 4:3
Contour Correction	horizontal, vertical (2H)
White Balance	AWC A, AWC B (R/B gain, painting), ATW, 3200K, 5600K preset
Black Balance	Auto (R/B pedestal, painting function)
Chroma Variability	7 levels
Encoding System	Y, R-Y, B-Y
Gain Selection	0 to 30 dB in step, AGC, Night Eye L/H
Electronic Shutter Speed	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Synchro scan (60.34 Hz to 15.75 kHz)
CCD Readout Selection	Field, Flame 1, Flame 2
Color Bars	SMPTE
Lens Mount	2/3" bayonet mount
Lens Diaphragm	Auto, Manual (only with remote control), Adjust On, Off
Selectors	MENU ITEM/AWC (AWC: when menu screen is not displayed) YES/ABC (ABC: when menu screen is not displayed) NO/BAR (BAR: when menu screen is not displayed)
Input/Output Connectors	VIDEO OUT: BNC connector G/L IN: BNC connector IRIS: 12 P round connector DC 12 V IN: DC connector I/F REMOTE: 50 P Dsub connector
Indicators	Red LED: Power On
Allowable Temperature Range	For storage: –4 °F to 140 °F (–20 °C to +60 °C) For guaranteeing performance: 41 °F to 95 °F (+5 °C to +35 °C) For guaranteeing operation: 14 °F to 113 °F (–10 °C to +45 °C)
Allowable Humidity Ranges	For storage: 20% to 90%, for operation: 20% to 90%
Dimensions (WxHxD)	3-5/16"x3-3/4"x7-9/16" (84x95x192 mm)
Weight	2.5 lbs (1.15 kg)

Appendix B

SD (PAL) Camera Block

Controls and Indicators

SD (PAL) camera controls and indicators are shown in Figure 33 and described in Table 18.

Figure 33. SD Camera Controls and Indicators

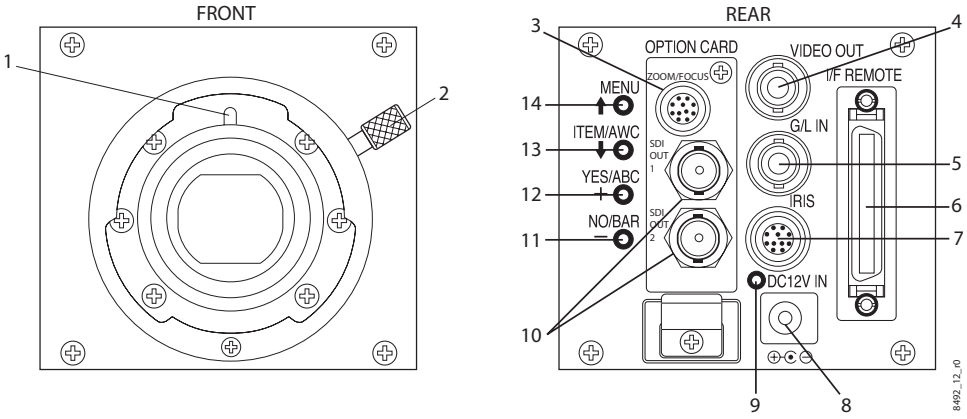


Table 18. SD Camera Controls and Indicators

Item	Name	Description
1	Lens mount	2/3" Standard bayonet type (B4) mount.
2	Lens fixing ring knob	Rotate the lens fixing ring knob counterclockwise and remove the lens mount cap. Mount the lens on the camera and rotate the lens fixing ring knob clockwise in order to fix the lens securely.
3	Zoom/Focus connector	Not Used.
4	Video Output connector (VIDEO OUT)	Composite video output.
5	G/L Input connector (G/L IN)	Gen-lock input.
6	I/F Remote connector (I/F REMOTE)	Input terminal dedicated to control signals from an optional remote control box.
7	Iris connector (IRIS)	Input terminal for lens with an iris control function.
8	DC 12 V input connector (DC 12V IN)	12 V dc input.
9	Power indicator	Red LED lamp lights when DC power is supplied to the camera.

Table 18. SD Camera Controls and Indicators

Item	Name	Description
10	SDI OUT 1 and 2	SDI video outputs (SDI Option card)
11	NO/BAR switch (NO/BAR/–)	When the camera is in shooting mode (menu not displayed), the color bar and shooting conditions are alternately indicated by pressing the switch. With the Main Menu displayed, you can scroll down to any Sub Menu. With a Sub Menu displayed, you can reduce the value of any setting.
12	YES/ABC switch (YES/ABC/+)	When the camera is in shooting mode (menu not displayed), the automatic black balance control can be set with this switch. With the Main Menu displayed, you can scroll up to any Sub Menu. With a Sub Menu displayed, you can increase the value of any setting.
13	ITEM/AWC switch (ITEM/AWC/S)	When the camera is in shooting mode (menu not displayed), the automatic white balance control can be set with this switch. With a menu displayed, any item can be selected by pressing this switch.
14	MENU switch (MENU/A)	A menu will appear on the monitor screen when this switch is pressed for about 5 seconds. This item can be selected by pressing the switch while the menu is on the screen.
15	Tally light (located on top of camera body, but not illustrated)	Dual-color LED Red - On Air Amber - Next Camera Requires dry contact tally control

Menu Selections

You can adjust camera settings via on-screen menus by using the controls on the back of the camera block or by using the JSC-2300 SHOT Director robotics/camera controller. These adjustments should be performed by qualified technical personnel only. If your system includes a JSC-2300 SHOT Director, always use the JSC-2300 SHOT Director's LCD menus to make these adjustments.

Use Mode Setting

The camera has four use modes, and various functions for four use modes have been preset. Functions can be set as best suited to each use mode.

Halogen mode

Suited to indoor shooting, such as at weddings, parties, lecture meetings, events, etc. Settings can be changed using a simple menu.

Fluorescent mode

Suited to indoor shooting under fluorescent lighting. Settings can be changed using a simple menu.

Outdoor mode

Suited to outdoor shooting. Settings can be changed using a simple menu.

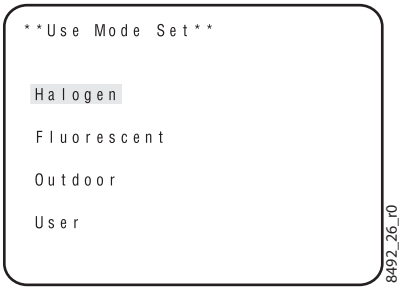
User mode

Settings can be changed using a detail menu.

Setting by Camera

1. Turn the camera on while keeping the MENU switch (Figure 33) depressed.
2. The use mode setting menu (Figure 34) appears on the monitor screen and one of the use mode blinks .

Figure 34. Use Mode Setting Menu



3. Press the MENU switch, ITEM/AWC switch, or NO/BAR switch to let the desired use mode blink.

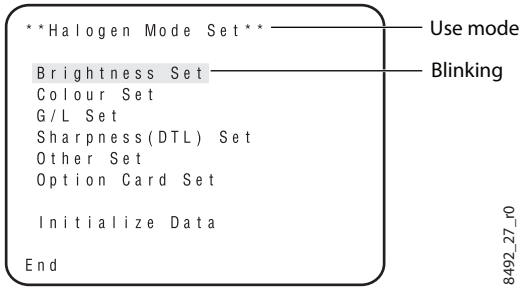
- MENU switch: The blinking item moves up one.
- ITEM/AWC switch, NO/BAR switch: The blinking item moves down one.

4. Press the YES/ABC switch. The blinking use mode comes into effect. After the use mode setting menu is shown for about 5 seconds, the camera returns to ready and operates in the selected use mode.

Menu Item Setting

Each of the four use modes of the camera has a main menu (Figure 35).

Figure 35. Main Menu - Halogen, Fluorescent, Outdoor Mode



- Each item of the main menu has a submenu, which consists of several settings.
- These settings have been preset to the optimum values to suit each use mode, and can be changed to suit actual shooting conditions.

1. Keep the MENU switch depressed for 5 seconds or more. The main menu appears on the monitor screen.
2. Each time the MENU switch, ITEM/AWC switch, or NO/BAR switch is pressed, the blinking item moves up or down.
3. When the YES/ABC switch is pressed after selecting the desired item to blink, the submenu for the selected item appears on the screen.
4. Select the desired item to be changed in its settings using the MENU switch and ITEM/AWC switch.
5. Press the YES/ABC switch or NO/BAR switch to change the settings.
6. Select [Return] using the MENU switch and ITEM/AWC, then press the YES/ABC switch to return to the main menu.
7. After changing the settings, take the following steps. Select [End] using the MENU switch and ITEM/AWC switch and press the YES/ABC switch.

Submenus Overview

The following submenus are for Halogen Mode, Fluorescent Mode, and Outdoor Mode on the NTSC version of the SD camera. User Mode submenus are described in *User Mode Submenus Overview* on page 69.

Brightness Setting

Figure 36. Brightness Setting Submenu

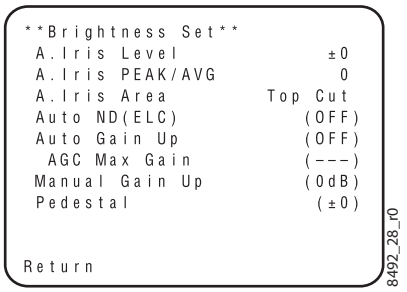


Table 19. Brightness Settings

Selection	Description
Iris Level	(-50 to +50) Convergence level of AUTO IRIS/AUTO GAIN UP/ AUTO ND (ELC) can be adjusted.
Iris PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AUTO GAIN up/AUTO ND (ELC) detected peak to average can be adjusted within a predetermined range.
Iris Area	A photometric measurement method can be selected for AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC). ALL: All the screen area is measured. Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top Cut: About one-third of the top part of the screen is excluded from measurement. BTM Cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L Cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto ND (ELC)	OFF: Luminance is not automatically adjusted by the electronic shutter. ON: The electronic shutter is controlled to automatically adjust the luminance. *ON is automatically selected when the Shutter Speed on the submenu [Other Set] is set to [Auto ND]. OFF is selected when other than [Auto ND] is selected.
Auto Gain Up	OFF: The light quantity is not adjusted automatically. ON: The light quantity is adjusted automatically. The maximum to which the gain can be increased using the Auto Gain Up function is selected by the AGC Max Gain setting.
AGC Max Gain	(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum amount to which the gain can be increased when “ON” has been selected as the Auto Gain Up setting.
Manu Gain Up	Manual setting is possible only when the Auto Gain Up setting is “OFF”. 0 dB: 0 dB should be selected in normal cases. 1 dB - 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes. N/Eye L (Night Eye L): Use this mode if sufficient video output can not be obtained even if 30 dB gain up should be selected. N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.

Color Setting

Figure 37. Color Setting Submenu

Table 20. Color Settings

Selection	Description
Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to any of three levels each.
Flesh Tone	(-3 to +3) Skin color can be decreased or increased to any of three levels each.
White Bal	ATW: The white balance is automatically adjusted to be always right. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in user mode. 3200 K: The white balance is adjusted to 3200 K illumination. 5600 K: The white balance is adjusted to 5600 K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW speed can be set.

G/L Adjustment Setting

Figure 38. G/L Adjustment Setting Submenu

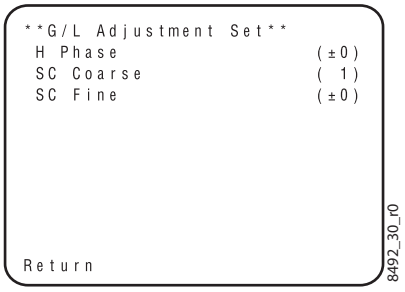


Table 21. G/L Adjustment Settings

Selection	Description
H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of sub carrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of sub carrier phase can be made when a genlock signal is supplied.

Sharpness (DTL) Setting Overview

Figure 39. Sharpness (DTL) Settings Submenu

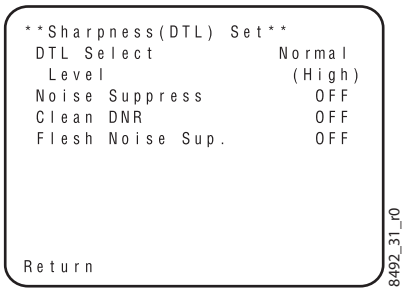


Table 22. Sharpness (DTL) Settings

Selection	Description
DTL Select	(Normal, Super DTL) If contour correction is not sufficient at the Normal position when Detail Level setting is set to Low or High, select the Super DTL position. *Neither Normal nor Super DTL is valid for contour correction if Detail Level setting is in the OFF position.
Level	(Off, Low, High) Detail level can be adjusted when Detail Select setting is at Normal. Super DTL level can be adjusted when it is at Super DTL.
Noise Suppress	(Off, Low, High) Screen noise can be reduced when Detail Level setting is at High or Low.
Clean DNR	(Off, Low, High) This enables the clean DNR effect to be selected.
Flesh Noise Sup.	(Off, Low, High) Flesh noise is suppressed in two steps when the Level setting is at High or Low.

Other Settings Overview

Figure 40. Other Settings Submenu

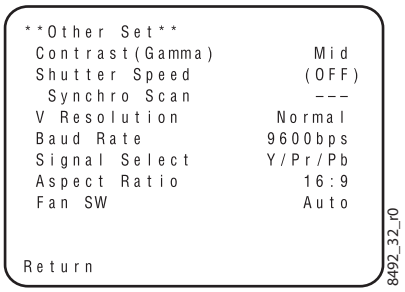


Table 23. Other Settings

Selection	Description
Contrast (Gamma)	(Low, Mid, High) Contrast can be adjusted to any of three levels.
Shutter Speed	OFF: Electronic shutter is turned off. 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected. S/Scan (Synchro Scan): Electronic shutter operates at the speed set with the Synchro Scan setting. Auto ND: Electronic shutter is controlled to automatically adjust the luminance. *Flickering may increase at Auto ND under fluorescent lights. *Auto ND is automatically selected if Auto ND (ELC) setting is set to ON.
Synchro Scan	(50.24 Hz to 15.63 kHz) This setting is possible only when the Shutter Speed setting is at S/Scan. Horizontal bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example. *For luminance settings at each shutter speed and synchro-scan shutter speed, refer to the following table.
V Resolution	Normal: Normal image. (CCD storage will be by field storage). Recommended for general use because sensitivity will decrease at the Fine setting. Fine: Vertical resolution increases. (Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.)
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) Select a communication speed in controlling the camera from the computer.

Shutter Speed	**Synchro Scan**	**Required Luminance Ratio**
OFF	-	1
1/120	120.2 Hz	2
1/250	250.0 Hz	4
1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

Table 23. Other Settings

Selection	Description
Signal Select	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Aspect Ratio	Aspect ratio can be selected from 16:9 or 4:3.
Fan SW	OFF: Select this setting to stop the fan when its operating sound is found to be bothersome in a studio or other such environment. Auto: The temperature is detected automatically, and the fan starts operating when the temperature exceeds approx. 95 °F (35 °C). Under normal circumstances, the "Auto" setting is used.

User Mode Submenus Overview

Iris, Shutter, Gain Settings Overview

Figure 41. Iris, Shutter, Gain Settings Submenu

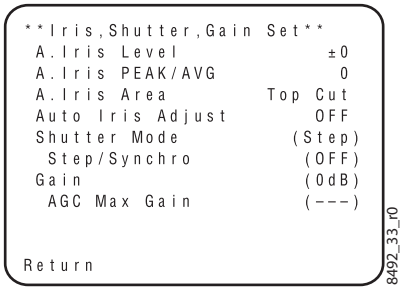


Table 24. Iris, Shutter, Gain Settings

Selection	Description
Iris Level	(-50 to +50) Convergence level of AUTO IRIS, AUTO GAIN UP, ELC can be adjusted.
Iris PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS, AUTO GAIN UP, ELC detected peak to average can be adjusted within a range.
Iris Area	A photometric measurement method can be selected for AUTO IRIS, AUTO GAIN UP, ELC. All: All the screen is measured. Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top cut: About one-third of the top portion of the screen is excluded from measurement. BTM cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto Iris Adjust	(ON, OFF)
Shutter Mode	Step: Electronic shutter operates at the speed selected by the Step/Synchro setting. S/Scan (Synchro Scan): Electronic shutter operates at the speed selected in Step/Synchro setting. ELC: Electronic shutter is controlled to automatically adjust the luminance. *If Frame 1 is selected in Field/Frame setting, Shutter Mode setting cannot be added.

Table 24. Iris, Shutter, Gain Settings

<table>
<tr><th>Selection</th><td>Description</td></tr>
<tr><td>Step/Synchro</td><td>This setting is possible only when Step or Synchro Scan is selected in Shutter Mode setting.
When “Step” has been selected as the Shutter Mode setting:
OFF: Electronic shutter is turned off.
1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected.
When “Synchro Scan” has been selected as the Shutter Mode setting:
60.34 Hz to 15.75 kHz: Bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example.
*For luminance setting at each shutter speed and synchro-scan shutter speed, refer to the table below.
<table>
<tr><th>Shutter Speed</th><th>Synchro Scan</th><th>Required Luminance Ratio</th></tr>
<tr><td>OFF</td><td>-</td><td>1</td></tr>
<tr><td>1/120</td><td>120.2 Hz</td><td>2</td></tr>
<tr><td>1/250</td><td>250.0 Hz</td><td>4</td></tr>
<tr><td>1/500</td><td>492.2 Hz</td><td>8</td></tr>
<tr><td>1/1000</td><td>984.4 Hz</td><td>16</td></tr>
<tr><td>1/2000</td><td>1.969 kHz</td><td>32</td></tr>
<tr><td>1/4000</td><td>3.938 kHz</td><td>64</td></tr>
<tr><td>1/10000</td><td>7.875 kHz</td><td>160</td></tr>
</table></td></tr>
<tr><td>Gain</td><td>Auto: The light quantity is adjusted automatically.
0 dB: 0dB should be selected in normal cases.
1 dB to 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes.
N/Eye L (Night Eye L): Use this mode if sufficient video output cannot obtained even if 30 dB gain up should be selected.
N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.</td></tr>
<tr><td>AGC Max Gain</td><td>(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum gain up when “Auto” has been selected as the gain setting.</td></tr>
</table>

Color Settings

Figure 42. Color Settings Submenu

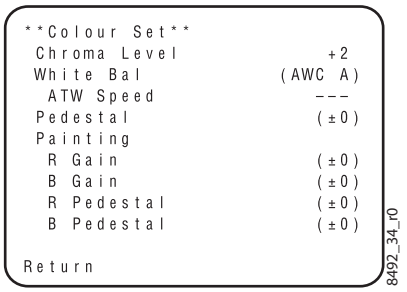


Table 25. Color Settings

Selection	Description
Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to three levels.
White Bal	ATW: The white balance is automatically adjusted to the optimum position. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in User Mode. 3200K: The white balance is adjusted to 3200K illumination. 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.
Painting	(-150 to +150) R Gain, B Gain: Fine adjustment of the white balance can be made after AWC setting when AWC A or AWC B is selected in White Balance Setting. The set value returns to ±0 after AWC setting in using the camera alone. R Pedestal, B Pedestal: Fine adjustment of the black balance can be made after ABC setting. The set value returns to ±0 after ABC setting in using the camera alone.

G/L Adjustment Settings

Figure 43. G/L Adjustment Setting Submenu

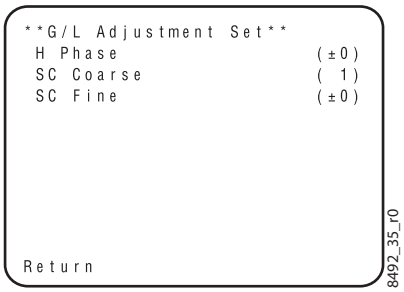


Table 26. G/L Adjustment Settings

Selection	Description
H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of sub carrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of sub carrier phase can be made when a genlock signal is supplied.

Detail Settings

Figure 44. Detail Setting Submenu

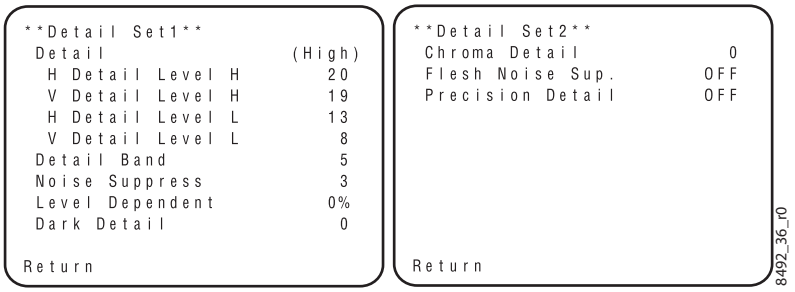


Table 27. Detail Settings

Selection	Description
Detail	(OFF, Low, High) Contour correction quantity can be selected. Detail settings made using the Horizontal/Vertical Detail Level High/Low setting. Detail level can be set in horizontal (H) and vertical (V) directions with the Detail setting at High or Low. Whichever the direction, H or V, the set level at High must be at least one position higher than that at Low.
H Detail Level H	(L+1 to +63)
V Detail Level H	(L+1 to +31)
H Detail Level L	(1 to H-1)
V Detail Level L	(1 to H-1)

Table 27. Detail Settings

Selection	Description
Detail Band	(1 to 5) A contour correction band can be set with the Detail setting at High or Low. The higher setting, the finer will be the detail.
Noise Suppress	(1 to 10) Screen noise can be reduced with the Detail setting at High or Low. If the noise suppress compensation level is set too high, a fine object will be reproduced less sharply.
Level Dependent	(0% to 25%) Screen noise due to the detail of dark parts of an object can be reduced. If the Level Dependent setting is set too high, however, hair, for example, will be reproduced less sharply.
Dark Detail	(0 to 5) The contours of the darker portions of an object can be emphasized. This setting is possible only when the Level Dependent setting is set to 0%.
Chroma Detail	(0 to 15) The contours of high-hue portions of an object can be emphasized.
Flesh Noise Sup.	(Off, Low, High) Flesh noise is suppressed in two steps when the Detail setting is at High or Low.
Precision Detail	(Off, Low, High) This setting is to narrow detail width and suppress detail glare.

Color Matrix Settings

Figure 45. Color Matrix Setting Submenu

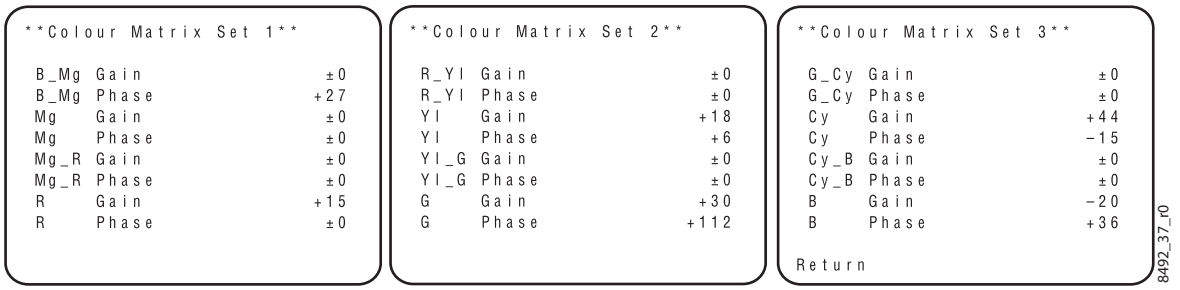


Table 28. Color matrix Settings

Selection	Description
B_Mg Gain	Increases or decreases the hue of the intermediate color between blue and magenta.
B_Mg Phase	Varies the hue of the intermediate color between blue and magenta.
Mg Gain	Increases or decreases the magenta.
Mg Phase	Varies the hue of the magenta.
Mg_R Gain	Increases or decreases the intermediate color between magenta and red.
Mg_R Phase	Varies the hue of the intermediate color between magenta and red.
R Gain	Increases or decreases the red.
R Phase	Varies the hue of the red.
R_Yl Gain	Increases or decreases the intermediate color between red and yellow.
R_Yl Phase	Varies the hue of the intermediate color between red and yellow
Yl Gain	Increases or decreases the intermediate color of yellow.
Yl Phase	Varies the hue of the yellow.
Yl_G Gain	Increases or decreases the intermediate color between yellow and green.

Table 28. Color matrix Settings

Selection	Description
YI_G Phase	Varies the hue of the intermediate color between yellow and green.
G Gain	Increases or decreases the green.
G Phase	Varies the hue of the green.
G_Cy Gain	Increases or decreases the intermediate color between green and cyan.
G_Cy Phase	Varies the hue of the intermediate color between green and cyan.
Cy Gain	Increases or decreases the cyan.
Cy Phase	Varies the hue of the cyan.
Cy_B Gain	Increases or decreases the intermediate color between cyan and blue.
Cy_B Phase	Varies the hue of the intermediate color between cyan and blue.
B Gain	Increase or decreases the intermediate color between blue and magenta.
B Phase	Varies the hue of the intermediate color between blue and magenta.

Other Settings

Figure 46. Other Settings Submenu

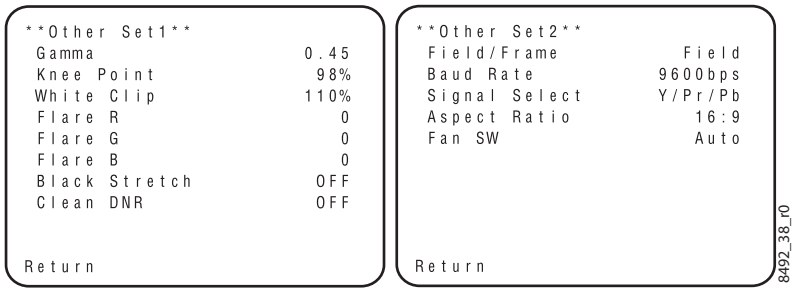


Table 29. Other Settings

Selection	Description
Gamma	(0.35 to 0.55) Gamma correction level can be set.
Knee Point	88% to 98%: The level of video signals subject to knee (knee point) can be set. Dynamic: Knee level is automatically adjusted according to the scene.
White Clip	(95% to 110%) The peak level of video signals to be white-clipped can be set.
Flare R/G/B	(0 to 100) Flare correction level can be adjusted.
Black Stretch	Black stretch to correct the suppression of black portions at low luminance can be set to ON or OFF.
Clean DNR	(Off, Low, High) This enables the clean DNR effect to be selected.
Field/Frame	Field: CCD storage will be by field storage. Frame 1: Vertical resolution increases in frame storage. Frame 2: Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) This setting is to select a communication speed in controlling the camera from the computer.
Signal Select	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.

Table 29. Other Settings

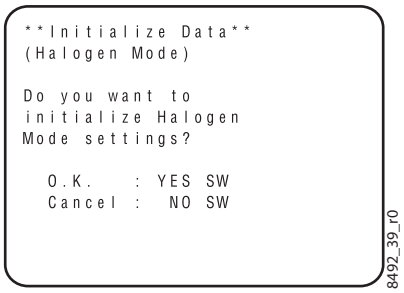
Selection	Description
Aspect Ratio	Aspect ratio can be selected from 16:9 or 4:3.
Fan SW	OFF: Select this setting to stop the fan when its operating sound is found to be bothersome in a studio or other such environment. Auto: The temperature is detected automatically, and the fan starts operating when the temperature exceeds approx. 95 °F (35 °C)

Initial Settings

In case of the wrong setting in any use mode, take the following steps to return to the initial settings.

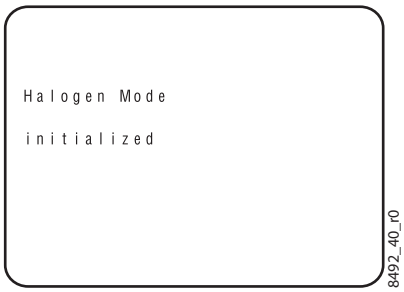
1. Select [Initialize Data] on the main menu screen of each Use Mode. Press the YES/ABC switch, then the [Initialize Data] screen (Figure 47) shows for about 10 seconds.

Figure 47. initialize Data Screen



2. Press the YES/ABC switch within about 10 seconds to return to the initial settings (Table 30 and Table 31), the existing settings are initialized (Figure 48), and the camera returns to main menu.

Figure 48. Data Initialized Screen



3. If the NO/BAR switch is pressed, or if the YES/ABC switch is not pressed, within about 10 seconds (Figure 49), and the camera returns to main menu, then the existing settings are not initialized.

Figure 49. Data Unchanged Screen

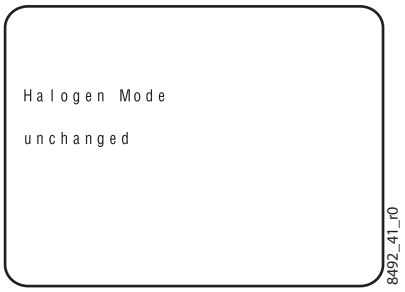


Table 30. Factory preset values for Halogen Mode, Fluorescent Mode, and Outdoor Mode

	Item	Halogen mode	Fluorescent mode	Outdoor mode
Brightness Set	Iris Level Iris PEAK/AVG iris Area Auto ND (ELC) Auto Gain Up AGC Max Gain Manu Gain Up Pedestal	±0 0 Top cut OFF OFF --- 0 dB ±0	±0 0 Top cut OFF OFF --- 0dB ±0	±0 0 Top cut ON ON N/Eye H --- -40
Color Set	Chroma Level Flesh Tone White Bal ATW Speed	±0 ±0 AWC A ---	±0 ±0 AWC A ---	±0 ±0 ATW Mid
G/L, Color Bar Set	H Phase SC Coarse SC Fine	±0 1 ±0	±0 1 ±0	±0 1 ±0
Sharpness (DTL) Set	DTL Select Level Noise Suppress Clean DNR Flesh Noise Sup.	Normal HIGH OFF OFF OFF	Normal HIGH OFF OFF OFF	Normal HIGH OFF OFF OFF
Other Set	Contrast (Gamma) Shutter Speed Synchro Scan V Resolution Baud Rate Signal Select Aspect Ratio Fan SW	Mid OFF --- Normal 9600 bps Y/Pr/Pb 16:9 Auto	Mid OFF --- Normal 9600 bps Y/Pr/Pb 16:9 Auto	Mid Auto ND --- Normal 9600 bps Y/Pr/Pb 16:9 Auto

Table 31. Factory preset values for User Mode

	Item	User mode
Iris, Shutter, Gain Set	Iris Level Iris PEAK/AVG Iris Area Auto Iris Adjust Shutter Mode Step/Synchro Gain AGC Max Gain	±0 0 Top cut OFF Step OFF 0 dB ---
Color Set	Chroma Level White Bal ATW Speed Pedestal Painting: R Gain B Gain R Pedestal B Pedestal	+2 AWC A --- ±0 ±0 ±0 ±0 ±0

Table 31. Factory preset values for User Mode

	Item	User mode
G/L, Color Bar Set	H Phase SC Coarse SC Fine	±0 1 ±0
Detail Set 1	Detail H Detail Level H V Detail Level H H Detail Level L V Detail Level L Detail Band Noise Suppress Level Dependent Dark Detail	High 20 19 13 8 5 3 0% 0
Detail Set 2	Chroma Detail Flesh Noise Suppress Precision Detail	0 OFF OFF
Color Matrix Set 1	B_Mg Gain B_Mg Phase Mg Gain Mg Phase Mg_R Gain Mg_R Phase R Gain R Phase	±0 ±0 +27 ±0 ±0 ±0 +15 ±0
Color Matrix Set 2	R_YI Gain R_YI Phase YI Gain YI Phase YI_G Gain YI_G Phase G Gain G Phase	±0 ±0 +18 +6 ±0 ±0 +30 +112
Color Matrix Set 3	G_Cy Gain G_Cy Phase Cy Gain Cy Phase Cy_B Gain Cy_B Phase B Gain B Phase	±0 ±0 +44 -15 ±0 ±0 -20 +36
Other Set 1	Gamma Knee Point White Clip Flare R Flare G Flare B Black Stretch Clean DNR	0.45 88% 110% 0 0 0 OFF OFF
Other Set 2	Field/Frame Baud Rate Component Aspect Ratio Fan SW Language	Field 9600 bps Y/Pr/Pb 16:9 Auto (English)

Specifications

SD (PAL) camera specifications are listed in Table 32.

Table 32. SD Camera Specifications

Power Requirements	12 Vdc 15.4 W
Optical System	2/3" Prism optical system, F1.4
Pickup Device	2/3" Interline wide CCD
Total Pixels	1008 (H)x591 (V) (About 540000 pixels)
Scanning System	629 lines, 50 fields, 25 flames
SYNC System	Internal: PAL standard External: BBS or VBS (BNCx1, Dsub 50 Px1)
Video Output	Composite: 1.0 Vp-p/75 Ohm (BNCx1, Dsub 50 Px1) Y/C Y: 1.0 Vp-p/75 Ohm; C: 0.3 Vp-p/75 Ohm (burst) (Dsub 50 Px1) Y/Pr/Pb Y: 1.0 Vp-p/75 Ohm; Pr, Pb: 0.525 Vp-p/75 Ohm (Dsub 50 Px1) RGB G: 1.0 Vp-p/75 Ohm; RB: 0.7 Vp-p/75 Ohm (Dsub 50 Px1)
Std Illumination Color Temp	2,000 lx (F11, 3200 K)
Minimum Illumination	0.4 lx (F1.7, Night Eye H)
S/N Ratio	63 dB (Y signal, DTL OFF, gamma OFF, DNR ON)
Horizontal Resolution	850 TV lines (high band DTL ON, center area)
Registration	0.05% (Entire screen, excluding effects of lens)
Aspect Ratio Conversion	16:9, 4:3
Contour Correction	Horizontal, vertical (2H)
White Balance	AWC A, AWC B (R/B gain, painting), ATW, 3200K, 5600K preset
Black Balance	Auto (R/B pedestal, painting function)
Chroma Variability	7 levels
Encoding System	Y, R-Y, B-Y
Gain Selection	0 to 30 dB in step, AGC, Night Eye L/H
Electronic Shutter Speed	1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Synchro scan (50.24 Hz to 15.63 kHz)
CCD Readout Selection	Field, Flame 1, Flame 2
Color Bars	Full
Lens Mount	2/3" bayonet mount
Lens Diaphragm	Auto, Manual (Only with remote control) Adjust, On, Off
Selectors	MENU ITEM/AWC (AWC: when menu screen is not displayed) YES/ABC (ABC: when menu screen is not displayed) NO/BAR (BAR: when menu screen is not displayed)
Input/Output Connectors	VIDEO OUT: BNC connector G/L IN: BNC connector IRIS: 12 P round connector DC 12 V IN: DC connector I/F REMOTE: 50 P Dsub connector
Indicators	Red LED: Power On
Allowable Temperature Range	For storage: –4 °F to 140 °F (–20 °C to +60 °C) For guaranteeing performance: 41 °F to 95 °F (+5 °C to +35 °C) For guaranteeing operation: 14 °F to 113 °F (–10 °C to +45 °C)
Allowable Humidity Ranges	For storage: 20% to 90%, for operation: 20% to 90%
Dimensions (WxHxD)	3-5/16"x3-3/4"x7-9/16" (84x95x192 mm)
Weight	2.5 lbs (1.15 kg)

Appendix C

HD Camera Block

Controls and Indicators

HD camera controls and indicators are shown in Figure 50 and described in Table 33.

Figure 50. HD Camera Controls and Indicators

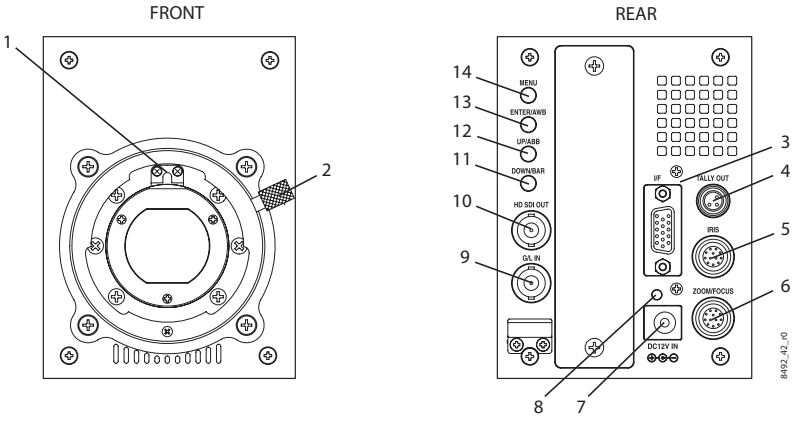


Table 33. HD Camera Controls and Indicators

Item	Name	Description
1	Lens mount	2/3" Standard bayonet type (B4) mount.
2	Lens fixing ring knob	Rotate the lens fixing ring knob counterclockwise and remove the lens mount cap. Mount the lens on the camera and rotate the lens fixing ring knob clockwise in order to fix the lens securely.
3	Interface connector (I/F)	Input terminal dedicated to control signals from an optional remote control box.
4	Tally output connector (TALLY OUT)	R tally and G tally outputs. These signals take effect when the optional card for studio applications has been inserted.
5	Iris connector (IRIS)	Input terminal for lens with an iris control function.
6	Zoom/Focus connector (ZOOM/FOCUS)	Used to connect the zoom/focus control cables of lens.
7	DC 12 V input connector (DC12V IN)	12 V DC input.
8	Operate indicator	Green LED illuminates to indicate DC power is supplied to the camera. When the video format is changed, the operate LED flashes twice when the format is 720/60p and once with any other format.

Table 33. HD Camera Controls and Indicators

Item	Name	Description
9	G/L input connector (G/L IN)	For gen-lock with the camera, the external sync signal (black burst) or tri-level sync signal is supplied to this input connector.
10	HD SDI output connector (HD SDI OUT)	SDI signal output.
11	DOWN/BAR switch (DOWN/BAR)	When the camera is in shooting mode (menu not displayed), the color bar and the shooting conditions are alternately indicated by pressing the switch for about 5 seconds. With the Main Menu displayed, you can scroll down through the Sub Menus. With a Sub Menu displayed, you can reduce the value of any setting. Each time the MENU switch is pressed while the UP/ABB switch and DOWN/BAR switch is held down and while the menu is not displayed, the video output format is changed in the following sequence: 720/60p, 720/59.94p, 720/50p, 1080/60i, 1080/59.94i, 1080/50i, 1080/30p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p. When the video format is changed, the operate indicator flashes twice with the 720/60p format and once with any other format.
12	UP/ABB switch (UP/ABB)	When the camera is in shooting mode (menu not displayed), the automatic black balance control (ABB) can be set with this switch. With the Main Menu displayed, you can scroll up through the Sub Menus. With the Sub Menu displayed, you can increase the value of any setting.
13	ENTER/AWB switch (ENTER/AWB)	When the camera is in shooting mode (menu not displayed), the automatic white balance control (AWB) can be set with this switch. With a menu displayed, you can select the target item.
14	MENU switch (MENU)	A menu will appear on the monitor screen when MENU switch is pressed for at least 3 seconds. The menu screen is cleared when the switch is pressed for at least 3 seconds while the menu is displayed.
15	Tally light (located on top of camera body, but not illustrated)	Dual-color LED Red - On Air Amber - Next Camera Requires dry contact tally control

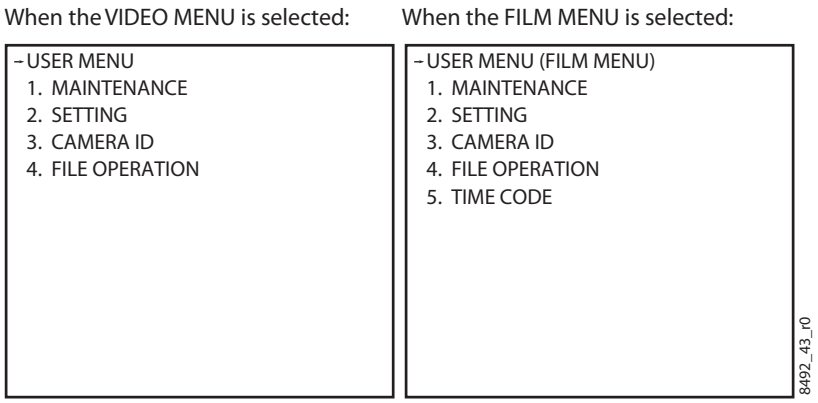
Menu Selections

You can adjust camera settings via on-screen menus by using the controls on the back of the camera block or by using the JSC-2300 SHOT Director robotics/camera controller. These adjustments should be performed by qualified technical personnel only. If your system includes a SHOT Director, always use the SHOT Director LCD menus to make these adjustments.

Setting by Camera

1. Turn the camera on while keeping the MENU switch depressed.
2. The top-level USER menu (Figure 51) appears on the monitor screen.

Figure 51. Top-Level USER Menu

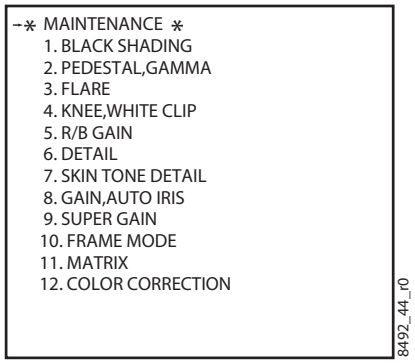


3. Press the UP or DOWN switch to move the cursor to the target item and press the ENTER switch to move to a menu at a lower hierarchical level.
4. Press the UP or DOWN switch to move the cursor to the target item in a submenu and press the ENTER switch to select the target item.
5. Press the UP or DOWN switch to increase or decrease any submenu item setting.
6. Press the MENU switch for at least 3 seconds with the menu displayed to exit the menu mode and return to shoot mode.

Maintenance Menu

The MAINTENANCE menu is shown in Figure 52. Submenus are discussed in the following paragraphs.

Figure 52. MAINTENANCE Menu



Black Shading Menu

The BLACK SHADING menu is shown in Figure 53. Menu selections are described in Table 34.

Figure 53. BLACK SHADING Menu

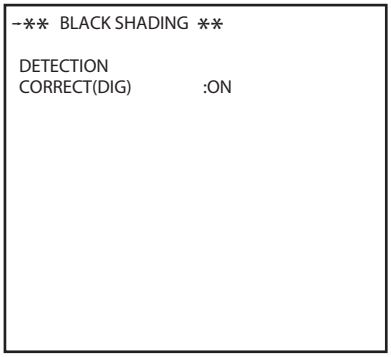


Table 34. BLACK SHADING Menu Selections

Selection	Description
DETECTION [READY, ACTIVE]	For automatically correcting the black shading.
CORRECT(DIG) [OFF, ON]	For ON/OFF control of the detection correction.

Pedestal, Gamma Menu

The PEDESTAL, GAMMA menu is shown in Figure 54. Menu selections are described in Table 35.

Figure 54. PEDESTAL, GAMMA Menu

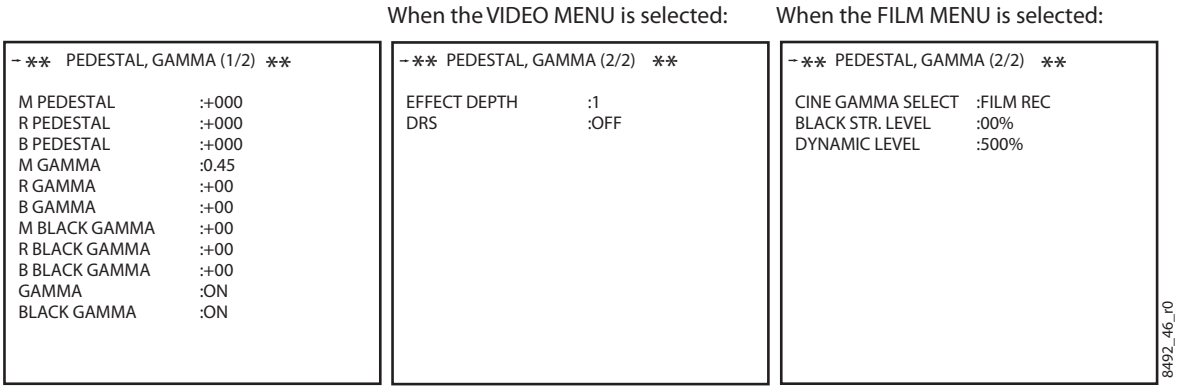


Table 35. PEDESTAL, GAMMA Menu Selections

Selection	Description
M PEDESTAL [–200 to +200]	For adjusting the black level.
R PEDESTAL [–100 to +100]	For correcting the red in relation to the master pedestal.
B PEDESTAL [–100 to +100]	For correcting the blue in relation to the master pedestal. When the AK-HRP150G has been connected, M PEDESTAL, R PEDESTAL and B PEDESTAL operations cannot be performed using the menu.

Table 35. PEDESTAL, GAMMA Menu Selections

Selection	Description
M GAMMA [0.35 to 0.75 (DRS OFF), –10 to +10 (DRS ON)]	For adjusting the gamma characteristics.
R GAMMA [–15 to +15 (DRS OFF), –10 to +10 (DRS ON)]	For adjusting the gamma characteristics of the red in relation to the master gamma characteristics.
B GAMMA [–15 to +15 (DRS OFF), –10 to +10 (DRS ON)]	For adjusting the gamma characteristics of the blue in relation to the master gamma characteristics.
M BLACK GAMMA [–31 to +31]	For adjusting the gamma characteristics in the vicinity of the black.
R BLACK GAMMA [–15 to +15]	For adjusting the gamma characteristics of the red in the vicinity of the black in relation to the master gamma characteristics.
B BLACK GAMMA [–15 to +15]	For adjusting the gamma characteristics of the blue in the vicinity of the black in relation to the master gamma characteristics.
GAMMA [OFF, ON]	For turning the gamma correction ON or OFF.
BLACK GAMMA [OFF, ON]	For turning the black gamma correction ON or OFF. When ON has been selected as the DRS setting, the BLACK GAMMA setting does not take effect.
EFFECT DEPTH [1 to 5]	For selecting the effects of the contrast adjustment when ON has been set for DRS.
DRS [OFF, ON]	For adjusting the contrast automatically when this is set to ON.
CINE GAMMA SELECT [VIDEO REC, FILM REC]	For selecting either the film-use or video-use cine gamma characteristics.
BLACK STR. LEVEL [00% to 30%]	For setting the BLACK STRETCH position.
DYNAMIC LEVEL [200% to 500%]	For setting the dynamic range.

Flare Menu

The FLARE menu is shown in Figure 55. Menu selections are described in Table 36.

Figure 55. FLARE Menu

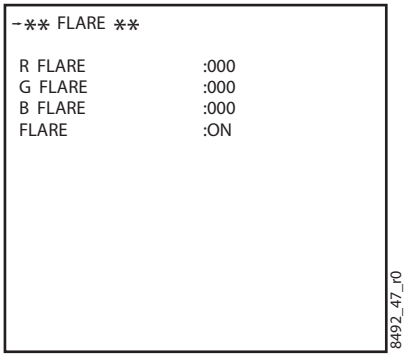


Table 36. FLARE Menu Selections

Selection	Description
R FLARE [000 to 100]	For adjusting the flare correction.
G FLARE [000 to 100]	
B FLARE [000 to 100]	
FLARE [OFF, ON]	For turning the flare correction ON or OFF.

Knee, White Clip Menu

The KNEE, WHITE CLIP menu is shown in Figure 56. Menu selections are described in Table 37.

Figure 56. KNEE, WHITE CLIP Menu

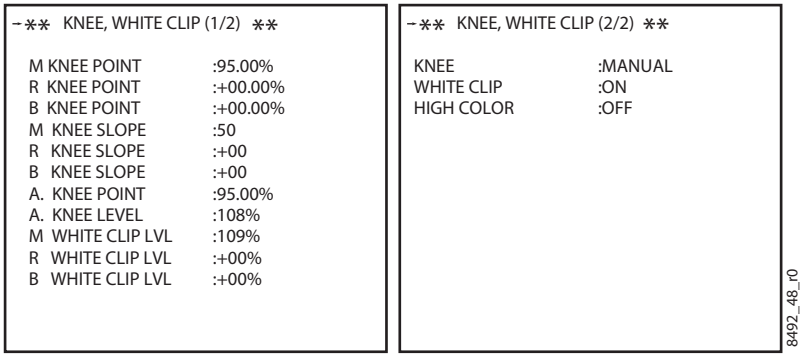


Table 37. KNEE, WHITE CLIP Menu Selections

Selection	Description
M KNEE POINT [80.00% to 107.00% (VIDEO MENU)] [30% to 90% (FILM MENU/VIDEO REC)]	For adjusting the knee point.
R KNEE POINT [–25.00% to +25.00%]	For correcting the knee point of the red in relation to the master knee point.
B KNEE POINT [–25.00% to +25.00%]	For correcting the knee point of the blue in relation to the master knee point.
M KNEE SLOPE [00 to 99 (VIDEO MENU)] [150% to 600% (FILM MENU)]	For adjusting the knee slope.
R KNEE SLOPE [–99 to +99]	For adjusting the knee slope of the red in relation to the master knee slope.
B KNEE SLOPE [–99 to +99]	For adjusting the knee slope of the blue in relation to the master knee slope. The M KNEE POINT and M KNEE SLOPE settings do not take effect when a setting other than MANUAL is selected for KNEE or ON is selected as the DRS setting when the VIDEO MENU has been selected or when FILM REC is selected as the CINE GAMMA SEL setting when the FILM MENU has been selected. Similarly, the R/B KNEE POINT and R/B KNEE SLOPE settings do not take effect when a setting other than MANUAL is selected for KNEE or ON is selected as the DRS setting when the VIDEO MENU has been selected or when the FILM MENU has been selected.
A. KNEE POINT [80.00% to 107.00%]	For setting the auto knee break point position. This setting does not take effect when a setting other than AUTO is selected for KNEE or ON is selected as the DRS setting when the VIDEO MENU has been selected or when the FILM MENU has been selected.
A. KNEE LEVEL [100% to 109%]	For setting the maximum level of auto knee. This setting does not take effect when a setting other than AUTO is selected for KNEE or ON is selected as the DRS setting when the VIDEO MENU has been selected or when the FILM MENU has been selected.
M WHITE CLIP LVL [90% to 109%]	For setting the white clip level.

Table 37. KNEE, WHITE CLIP Menu Selections

Selection	Description
R WHITE CLIP LVL [–15% to +15%]	For correcting the amount of red for the M WHITE CLIP LVL.
B WHITE CLIP LVL [–15% to +15%]	For correcting the amount of blue for the M WHITE CLIP LVL.
KNEE [OFF, MANUAL, AUTO]	For selecting the knee operation mode. This setting does not take effect when FILM REC is selected.
WHITE CLIP [OFF, ON]	For tuning white clip ON or OFF.
HIGH COLOR [OFF, ON]	For improving the color reproducibility of the high-brightness areas when it is set to ON. This setting does not take effect when a setting other than MANUAL is selected for KNEE or ON is selected as the DRS setting when the VIDEO MENU has been selected or when the FILM MENU has been selected.

R/B Gain Menu

The R/B GAIN menu is shown in Figure 57. Menu selections are described in Table 38.

Figure 57. R/B GAIN Menu

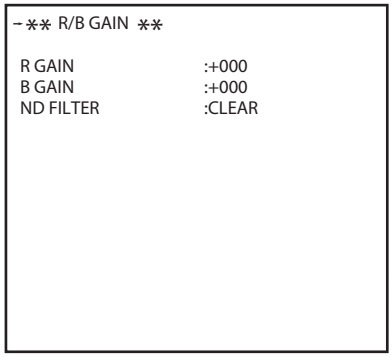


Table 38. R/B GAIN Menu Selections

Selection	Description
R GAIN [–200 to +200]	For adjusting the gain of the red.
B GAIN [–200 to +200]	For adjusting the gain of the blue.
ND FILTER [CLEAR, 1/4, 1/16, 1/64]	For selecting the ND filter setting. When the AK-HRP150G has been connected, the items on this page cannot be operated using the menu.

Detail Menu

The DETAIL menu is shown in Figure 58. Menu selections are described in Table 39.

Figure 58. DETAIL Menu

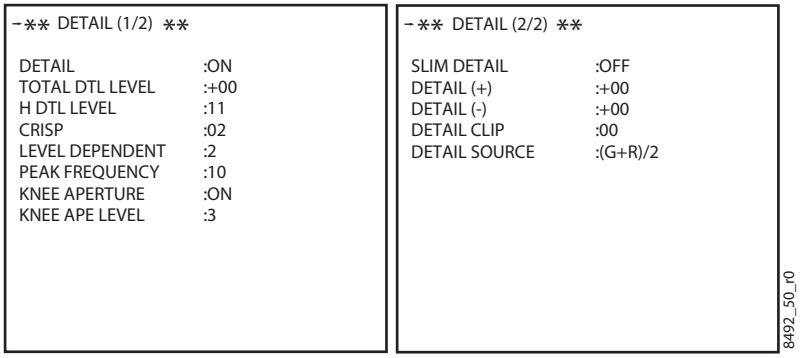


Table 39. DETAIL Menu Selections

Selection	Description
DETAIL [OFF, ON]	For turning all the detail functions ON or OFF.
TOTAL DTL LEVEL [–31 to +31]	For setting the H DTL and V DTL levels.
H DTL LEVEL [0 to 63]	For setting the H DTL level.
CRISP [0 to 31]	For setting the noise elimination level of the detail signals.
LEVEL DEPENDENT [0 to 15]	For removing the detail in the dark areas.
PEAK FREQUENCY [00 to 31]	For setting the H DTL peak frequency.
KNEE APERTURE [OFF, ON]	For turning the emphasizing of the outlines for the high-brightness areas ON or OFF.
KNEE APE LEVEL [0 to 5]	For adjusting the knee aperture level.
SLIM DETAIL [OFF, ON]	For setting the detail more finely at ON.
DETAIL(+) [–31 to +31]	For adjusting the detail gain in the + direction.
DETAIL(–) [–31 to +31]	For adjusting the detail gain in the – direction.
DETAIL CLIP [0 to +63]	For minimizing the glare caused by adding too much detail as a result of a detail clip adjustment.
DETAIL SOURCE [(G+R)/2, (G+B)/2, (2G+B+R)/4, (3G+B)/4, R, G]	For setting the ratio of the RGB signal components which create the detail.

Skin Tone Detail Menu

The SKIN TONE DETAIL menu is shown in Figure 59. Menu selections are described in Table 40.

Figure 59. SKIN TONE DETAIL Menu

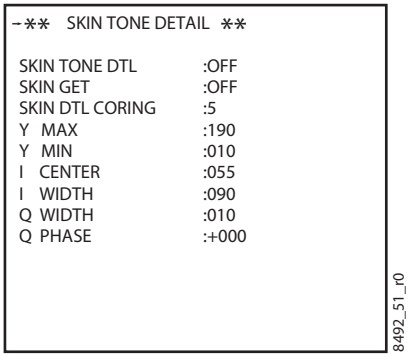


Table 40. SKIN TONE DETAIL Menu Selections

Selection	Description
SKIN TONE DTL [OFF, ON]	For turning the SKIN TONE DTL ON or OFF.
SKIN GET [OFF, ON]	When ON is selected, the box cursor is output to the screen center. When the image of the subject's skin is placed inside the box cursor and the ENTER operation is performed, I CENTER and Q PHASE are set automatically.
SKIN DTL CORING [0 to 7]	For setting the SKIN TONE DTL coring amount.
Y MAX [0 to 255]	For setting the upper limit of the brightness in the skin tone specification area.
Y MIN [0 to 255]	For setting the lower limit of the brightness in the skin tone specification area.
I CENTER [0 to 255]	For setting the phase of the I axis in the skin tone specification area.
I WIDTH [0 to 255]	For setting the phase width of the I axis in the skin tone specification area.
Q WIDTH [0 to 255]	For setting the phase range of the Q axis in the skin tone specification area.
Q PHASE [–128 to +127]	For setting the phase of the Q axis in the skin tone specification area.

Gain, Auto Iris Menu

The GAIN, AUTO IRIS menu is shown in Figure 60. Menu selections are described in Table 41.

Figure 60. GAIN, AUTO IRIS Menu

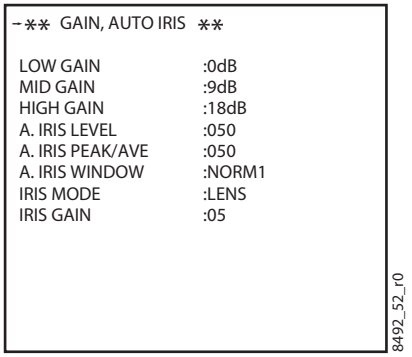


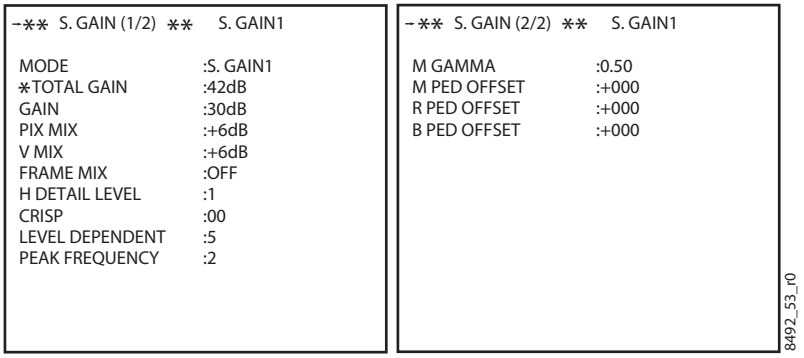
Table 41. GAIN, AUTO IRIS Menu Selections

Selection	Description
LOW GAIN [–6 dB to 30 dB] **MID GAIN [–6 dB to 30 dB]** **HIGH GAIN [–6 dB to 30 dB]**	For setting the amount by which the gain is to be increased when LOW, MID or HIGH has been selected by GAIN SELECT.
A.IRIS LEVEL [0 to 100]	For adjusting the target level (brightness) of the auto iris.
A.IRIS PEAK/AVE [0 to 100]	For setting the ratio between the auto iris light-metering peak value and average value.
A.IRIS WINDOW [NORM1, NORM2, CENTR]	For setting the auto iris light-metering area. NORM1: The light is metered on the entire screen (except around the edges). NORM2: The light is metered on the entire screen (except at the top). CENTR: The light is metered only in the area at the screen center.
IRIS MODE [LENS, CAM]	For switching between the iris gain control on the lens (LENS) and the menu (CAM) to adjust the focusing speed of the auto iris. Normally, LENS is selected, and the speed is adjusted using the iris gain control on the lens.
IRIS GAIN [01 to 10]	For adjusting the iris gain when CAM has been selected as the IRIS MODE setting.

Super Gain Menu

The SUPER GAIN menu is shown in Figure 61. Menu selections are described in Table 42.

Figure 61. SUPER GAIN Menu



Note These settings are performed when S.GAIN1, S.GAIN2 or S.GAIN3 has been selected by GAIN SELECT.

Table 42. SUPER GAIN Menu Selections

Selection	Description
MODE [S.GAIN1, S.GAIN2, S.GAIN3]	For selecting the S.GAIN storage table.
TOTAL GAIN [0 dB to 72 dB]	For displaying the total gain for GAIN, PIX MIX, V MIX and FRAME MIX.
GAIN [0 dB to 36 dB]	For setting the gain increase.
PIX MIX [OFF, +6 dB]	For setting the addition of horizontal pixels ON or OFF.
V MIX [OFF, +6 dB]	For setting the addition of vertical pixels ON or OFF.
FRAME MIX [OFF, +6 dB to +24 dB]	For setting the gain increase based on accumulation in the CCD image sensor. This setting does not take effect when MENU SEL is set to FILM MENU and the 720/60p or 720/59.94p is selected as the FORMAT setting.
H DETAIL LEVEL [00 to 63]	For setting the H DETAIL level.
CRISP [00 to 31]	For setting the noise elimination level of the detail signals.
LEVEL DEPENDENT [0 to 15]	For removing the detail in the dark areas. The higher the number set, the wider the range in which the detail is removed.
PEAK FREQUENCY [0 to 31]	For setting the H DTL peak frequency.
M GAMMA [0.35 to 0.75 (DRS OFF)] [–10 to +10 (DRS ON)]	For adjusting the gamma characteristics.
M PED OFFSET [–200 to +200]	For adjusting the amount of offset in the black level.
R PED OFFSET [–200 to +200]	For adjusting the amount of offset in the R pedestal.
B PED OFFSET [–200 to +200]	For adjusting the amount of offset in the B pedestal.

Frame Mode Menu

The FRAME MODE menu is shown in Figure 62. Menu selections are described in Table 43.

Figure 62. FRAME MODE Menu

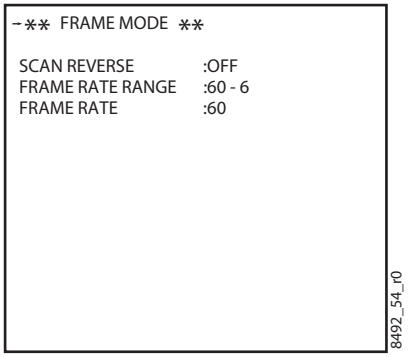


Table 43. FRAME MODE Menu Selections

Selection	Description
SCAN REVERSE [OFF, REVERSE1 to 3]	For selecting the video output scanning
FRAME RATE RANGE [60-6, 60-4]	For selecting the range over which the frame rate can be varied with variable frames. 60-6: 60 to 6 frames per second 60-4: 60 to 4 frames per second
FRAME RATE [60 to 4]	For setting the frame rate. The FRAME RATE RANGE and FRAME RATE settings do not take effect when MENU SEL is set to FILM MENU and the 720/60p or 720/59.94p is selected as the FORMAT setting.

Matrix Menu

The MATRIX menu is shown in Figure 63. Menu selections are described in Table 44.

Figure 63. MATRIX Menu

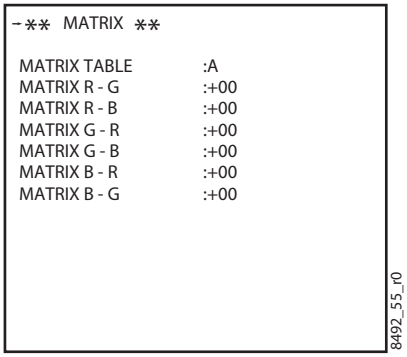


Table 44. MATRIX Menu Selections

Selection	Description
MATRIX TABLE [A, B]	For selecting the table in which the matrix data is to be stored.
MATRIX R-G [–31 to +31] **MATRIX R-B [–31 to +31]** **MATRIX G-R [–31 to +31]** **MATRIX G-B [–31 to +31]** **MATRIX B-R [–31 to +31]** **MATRIX B-G [–31 to +31]**	For adjusting the color tone of each color phase.

Color Correction Menu

The COLOR CORRECTION menu is shown in Figure 64. Menu selections are described in Table 45.

Figure 64. COLOR CORRECTION Menu

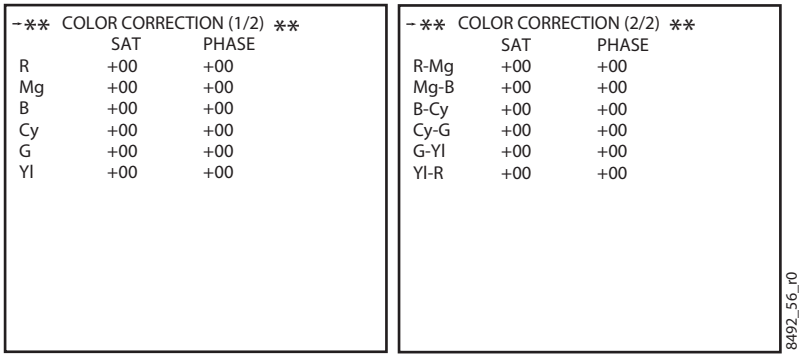


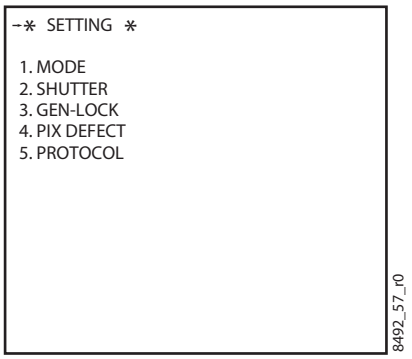
Table 45. COLOR CORRECTION Menu Selections

Selection	Description
R SAT/PHASE [–63 to +63] **Mg SAT/PHASE [–63 to +63]** **B SAT/PHASE [–63 to +63]** **Cy SAT/PHASE [–63 to +63]** **G SAT/PHASE [–63 to +63]** **YI SAT/PHASE [–63 to +63]** **R-Mg SAT/PHASE [–63 to +63]** **Mg-B SAT/PHASE [–63 to +63]** **B-Cy SAT/PHASE [–63 to +63]** **Cy-G SAT/PHASE [–63 to +63]** **G-YI SAT/PHASE [–63 to +63]** **YI-R SAT/PHASE [–63 to +63]**	For adjusting the color tone of each color phase.

Setting Menu

The SETTING menu is shown in Figure 65. Submenus are described in the following paragraphs.

Figure 65. SETTING Menu



Mode Menu

The MODE menu is shown in Figure 66. Menu selections are described in Table 46.

Figure 66. MODE Menu

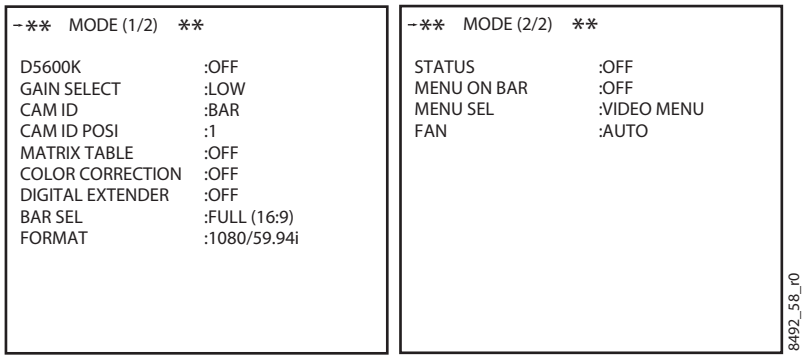


Table 46. MODE Menu Selections

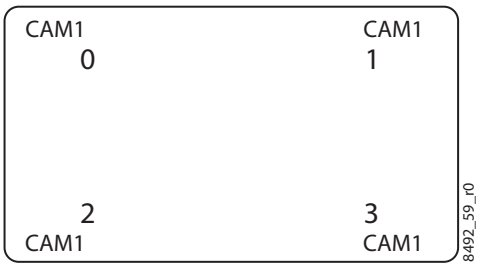
Selection	Description
D5600K [OFF, ON]: **When the VIDEO MENU is selected.** **LIGHTING [TUNGSTEN, DAYLIGHT]:** **When the FILM MENU is selected**	For electrically compensating for a color temperature of approximately 5,600K.
GAIN SELECT **[LOW, MID, HIGH, S.GAIN1 to 3]**	For selecting LOW, MID, HIGH, S.GAIN1, S.GAIN2 or S.GAIN3 as the gain setting.
CAM ID [OFF, BAR, ON]	For selecting how the camera ID is to be displayed. OFF: The camera ID is not displayed. BAR: The camera ID is displayed only in the color bar mode. ON: The camera ID is displayed at all times.
CAM ID POSI [0 to 3]	For selecting where the camera ID is to be displayed.  0: top left, 1: top right, 2: bottom left, 3: bottom right
MATRIX TABLE [OFF, A, B]	For selecting OFF, A or B as the matrix setting.
COLOR CORRECTION [OFF, ON]	For turning the color correction function ON or OFF.
DIGITAL EXTENDER [OFF, ON]	For digitally doubling the images when set to ON.
BAR SEL **[FULL (16:9), FULL (4:3), SMPTE (16:9), SMPTE (4:3), ARIB]**	For selecting the color bars. Select the 4:3 color bars for down-conversion at the system side. The color bars and characters will then be contained within the 4:3 picture angle.

Table 46. MODE Menu Selections

Selection	Description
FORMAT [720/60p, 59.94p, 50p, 1080/ 60i, 59.94i, 50i, 1080/30p, 29.97p, 25p, 24p, 23.98p]	For selecting the video output format. The format is switched when the ENTER operation is performed.
STATUS [OFF, ON]	For turning the AWB/ABB operation displays ON or OFF. The status displays are as follows. **AWB ACTIVE:** While automatic white balance is being executed. **AWB OK:** When the automatic white balance has been adjusted satisfactorily. **OUT RANGE RB:** When the automatic white balance has not been adjusted satisfactorily. ("RB" denotes the colors which were not balanced properly.) **HIGH LIGHT NG:** When the lighting is too high. **LOW LIGHT NG:** When the lighting is too low. **ABB ACTIVE:** While automatic black balance is being executed. **IRIS CONTROL NG:** When the lens is open. **ABB OK:** When the automatic black balance has been adjusted satisfactorily. **OUT RANGE RGB:** When the automatic black balance has not been adjusted satisfactorily. ("RGB" denotes the colors which were not balanced properly.)
MENU ON BAR [OFF, ON]	For selecting whether the menu is to be displayed with the color bars. Switching from ON to OFF or vice versa is not possible when color bars have been set.
MENU SEL [VIDEO MENU, FILM MENU]	For selecting the menu display.
FAN [OFF, AUTO, ON]	For selecting the operation mode of the air-cooled fan. OFF: The fan is always off. AUTO: The fan is automatically controlled by the temperature sensor. ON: The fan is running at all times. At the FAN OFF setting, ensure that the product is operated in an ambient temperature below 86°F (30°C).

Shutter Menu

The SHUTTER menu is shown in Figure 67. Menu selections are described in Table 47.

Figure 67. SHUTTER Menu

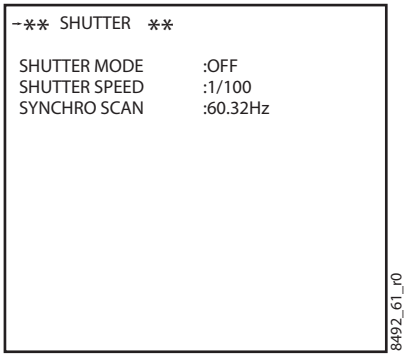


Table 47. SHUTTER Menu Selections

Selection	Description
SHUTTER MODE [OFF, ON, SYNCHRO]	For selecting the operation mode of the shutter. OFF: For turning the shutter OFF. ON: For setting the shutter speed which was set by SHUTTER SPEED. SYNCHRO: For setting the shutter speed which was set by SYNCHRO SCAN.
SHUTTER SPEED [1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 (VIDEO MENU)] [180.0 deg, 172.8 deg, 144.0 deg, 120.0 deg, 90.0 deg, 45.0 deg (FILM MENU)]	For setting the shutter speed at the SHUTTER ON setting.
SYNCHRO SCAN [60.32 Hz to 150.0 Hz (*1)] [50.26 Hz to 125.0 Hz (*2)] [358.1 deg to 144.0 deg (FILM MENU)]	For setting the shutter speed in the synchro scanning mode. *1: 60p, 60i, 59.94i, 30p or 29.97p format with VIDEO MENU *2: 50p, 50i, 25p, 24p or 23.98p format with VIDEO MENU

Gen-Lock Menu

The GEN-LOCK menu is shown in Figure 68. Menu selections are described in Table 48.

Figure 68. GEN-LOCK Menu

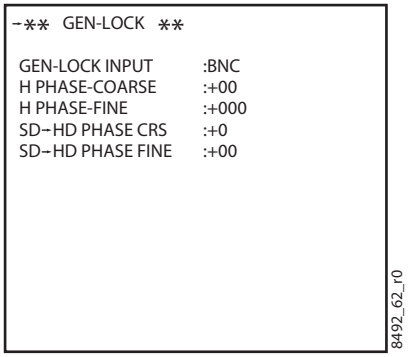


Table 48. GEN-LOCK Menu Selections

Selection	Description
GEN-LOCK INPUT [BNC, DSUB]	For selecting whether the sync signals are to be input from the BNC or D-SUB connector.
H PHASE-COARSE [–40 to +40 (720 mode)] [–60 to +60 (1080 mode)]	For roughly adjusting the horizontal phase.
H PHASE-FINE [–45 to +45]	For finely adjusting the horizontal phase.
SD HD PHASE CRS [–4 to +4]	For roughly adjusting the phase of the HD video signals when SD sync signals have been input.
SD HD PHASE FINE [–99 to +99]	For finely adjusting the phase of the HD video signals when SD sync signals have been input.

Pix Defect Menu

The PIX DEFECT menu is shown in Figure 69. Menu selections are described in Table 49.

Figure 69. PIX DEFECT Menu

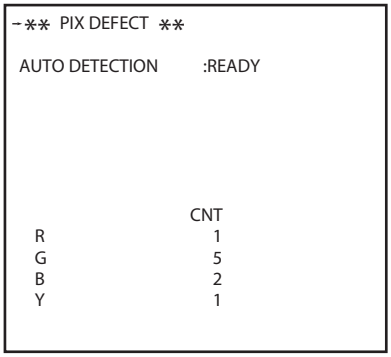


Table 49. PIX DEFECT Menu Selections

Selection	Description
AUTO DETECTION	When ACTIVE is selected, automatic defect compensation processing* is performed, and when this processing is completed, the status returns to READY. * Execute automatic defect compensation processing after supplying the power to the camera at the normal temperature for at least two hours.

Protocol Menu

The PROTOCOL menu is shown in Figure 70. Menu selections are described in Table 50.

CAUTION Changing the protocol to anything other than 4, will cause to camera block to lose communication with the pan/tilt head, SHOT Director, and Ignite system. If you lose communication, you must reset the protocol to 4 using the controls and indicators on the back of the camera block.

Figure 70. PROTOCOL Menu

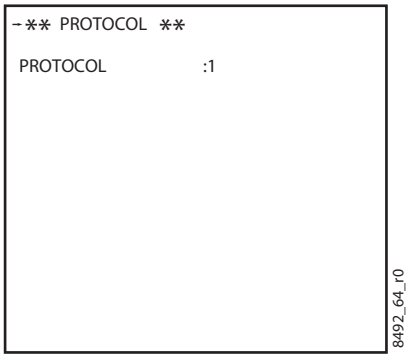


Table 50. PROTOCOL Menu Selections

Selection	Description
PROTOCOL [1 to 4]	For selecting the remote control communication system in accordance with the system connected. 1: Information camera communication protocol (EIA422). 2: Information camera communication protocol (EIA232). For connecting a PC. 3: Convertible PC control protocol (EIA422). 4: Convertible PC control protocol (EIA232). For connecting the pan/tilt head (baud rate fixed at 9600 bps). The protocol is actually switched after the power has been turned off and back on.

Camera ID Menu

The CAMERA ID menu is shown in Figure 71. Menu selections are described in Table 51.

Figure 71. CAMERA ID Menu

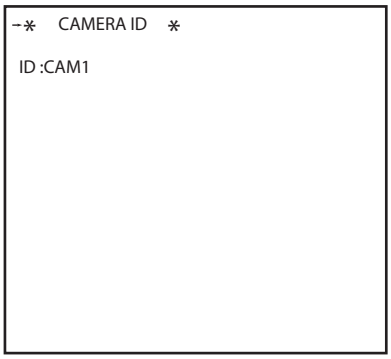


Table 51. CAMERA ID Menu Selections

Selection	Description
ID:	An ID of not more than 10 characters consisting of alphanumerics, symbols and spaces can be set for the camera. The camera ID is displayed at all times when ON is selected in the CAM ID mode but displayed only when color bar signals are output in the BAR mode. The status for setting the ID is established by moving the cursor above the colon (:) and selecting it. Move the cursor to the positions of the characters to be set, select the characters and enter them. Characters which can be entered: spaces, upper-case letters (A to Z), numbers (0 to 9), and symbols (' , >, <, /, -)

File Operation Menu

The FILE OPERATION menu is shown in Figure 72. Menu selections are described in Table 52.

Figure 72. FILE OPERATION Menu

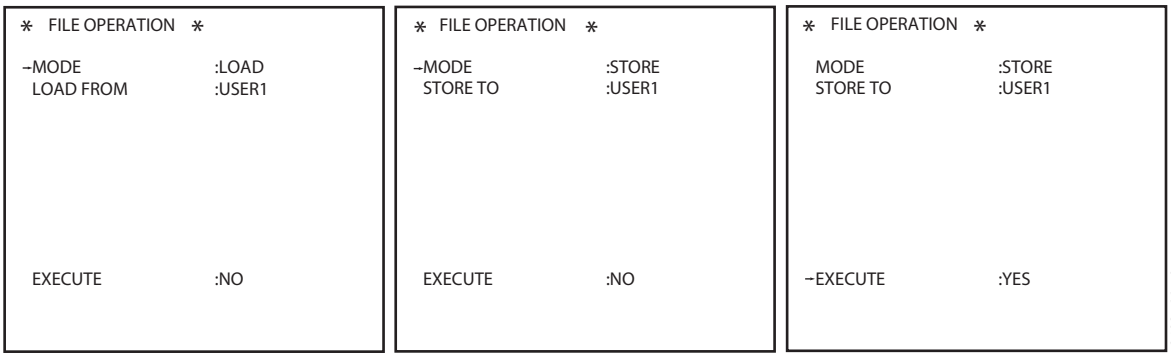


Table 52. FILE OPERATION Menu Selections

Selection	Description
MODE [LOAD/STORE]	Select LOAD when settings are to be loaded from a file; select STORE when the current settings are to be saved in a file.
LOAD/STORE FROM	For selecting the LOAD or STORE destination. PRESET, USER1 or USER2 can be selected as the LOAD destination when LOAD has been selected; USER1 or USER2 can be selected as the STORE destination when STORE has been selected.
EXECUTE	LOAD or STORE is executed when NO is switched to YES and the ENTER operation is performed. The NO setting is returned to the display after the data has been loaded or stored.

Time Code Menu

The TIME CODE menu is shown in Figure 73. Menu selections are described in Table 53.

Note TIME CODE is displayed ONLY when FILM MENU has been set and either the 720/60p or 720/59.94p format has been selected.

Figure 73. TIME CODE Menu

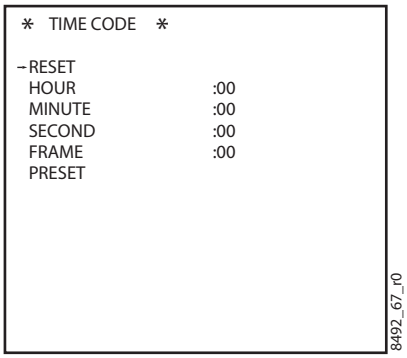


Table 53. TIME CODE Menu Selections

Selection	Description
RESET	For resetting the time code to zero.
HOUR [00 to 23]	For setting the hour digits of the preset value for the time code.
MINUTE [00 to 59]	For setting the minute digits of the preset value for the time code.
SECOND [00 to 59]	For setting the second digits of the preset value for the time code.
FRAME [00, 10, 20, 30, 40, 50]	For setting the frame digits of the preset value for the time code.
PRESET	For presetting the time code.

Adjustments

Camera adjustments can be accomplished in one of two modes, shooting mode or menu mode.

Shooting mode adjustments are accomplished by pressing rear panel switches while viewing a specific target object/scene.

Menu mode adjustments are accomplished by accessing the USER menu, navigating to a desired submenu, then adjusting the value of a specific submenu item.

Shooting Mode Adjustments

White Balance Adjustment

Set the automatic white balance control by pressing the ENTER/AWB switch (with no menu displayed), while shooting a white object that fills at least 50% of the screen.

Note If the white signal level is over 100% or less than 50%, the white balance may not adjust properly.

Black Balance Adjustment

Note Black balance is adjusted with the lens closed. When the motor drive lens is controlled from the camera, adjusting the black balance causes the lens to automatically close.

Set the automatic black balance by pressing the UP/ABB switch, with no menu displayed.

Gen-lock Adjustment

When multiple cameras are used or the camera is combined with other equipment, it is necessary to adjust the phase-for-phase matching by external synchronization.

Using a two-phenomenon oscilloscope, observe the external synchronizing signal input (black burst signal) and video signal output waveforms. Adjust the horizontal phase using the camera GEN-LOCK menu.

When using HD synchronizing signals:

1. Roughly adjust the synchronizing signal input and video signal output phases by H PHASE-COARSE.

2. Finely adjust the synchronizing signal input and video signal output phases by H PHASE-FINE.

When using SD synchronizing signals:

1. Roughly adjust the synchronizing signal input and video signal output phases by SDHD PHASE-CRS (coarse).
2. Finely adjust the synchronizing signal input and video signal output phases by SD-HD PHASE-FINE. If the adjustment performed using SD-HD PHASE is not satisfactory, use H PHASE-COARSE/FINE.

Specifications

HD camera specifications are listed in Table 54.

Table 54. HD Camera Specifications

Source Voltage	12 V dc
Power Consumption	17 W
Image Pickup Device	2/3" 1 million-pixel IT, CCDx3
System	GBR image pickup system
Resolving Optical System	F1.4 prism
Optical Filter	ND; Clear, 1/4, 1/16, 1/64
Lens Mount	Bayonet Type
Output Format	1080: 60i/59.94i/50i/30psF/29.97psF/25psF/24psF/23.98psF 720: 60p/59.94p/50p
Sensitivity	F10, 2000lx, 3200K, white reflection rate 89.9%
S/N	54 dB
Ambient Operating Temperature	+32 ºF to +104 ºF (0 ºC to +40 ºC)
Storage Temperature	-4 ºF to +140 ºF (-20 ºC to +60 ºC)
Weight	~3.3 lbs (1.5 kg)
Dimensions (WxHxD)	3-9/16" x 4-5/8" x 6-5/16" (90 mm x117 mm x 160 mm)
Video Output	HD SDI (BNC 1 system)
SYNC Input	SYNC input (GL input 3 value SYNC/BB)
Camera Connector	D-SUB 15-pin connector seat (JAE: D02-M15SAG-20L9E)
Control System	Synchronous (EIA-422)
Lens Connector 1	Iris control (HIROSE: HR10A-10R12SC)
Lens Connector 2	Zoom, focus control (HIROSE: HR10A-10R12PC

Appendix D

Robotic (Pan/Tilt Head)

Controls and Indicators

Robotic pan/tilt head controls and indicators are shown in Figure 74 and described in Table 55.

Figure 74. Robotic Pan/Tilt Head Controls and Indicators

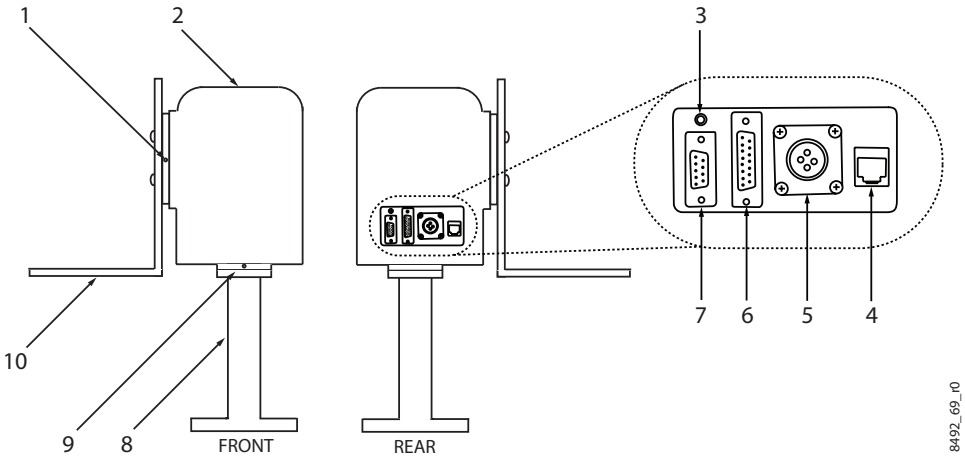


Table 55. Robotic Pan/Tilt Head Controls and Indicators

Item	Name	Description
1	Zero degree tilt registration hole	Used to orient the pan/tilt head in the desired direction prior to mounting.
2	Robotic pan/tilt head	Contains the electro-mechanical assemblies necessary to perform pan/tilt movement.
3	Reset switch	Resets the pan/tilt head to default IP addresses 192.168.0.126 and subnet mask to 255.255.255.0. Also sets controller (SHOT Director) address to 192.168.0.100.
4	Ethernet connector	IP control/communication from subnet hub
5	Amphenol circular connector	48 V dc power supply input

Table 55. Robotic Pan/Tilt Head Controls and Indicators

Item	Name	Description
6	DB15 connector	Camera control cable provides serial control and 12 V dc power from the pan/tilt head to the camera block.
7	DB9 connector	Zoom/focus to lens
8	8" pedestal mount	Extension pedestal mount.
9	Zero degree pan registration mark	Used to verify that the pan/tilt head is pointed in the correct direction prior to mounting.
10	Camera mount L-bracket	Used to mount camera or prompter

Default and Recommended Camera ID and IP addresses

The pan/tilt head and JSC-2300 SHOT Director are factory set to default IP addresses to allow the units to communicate initially. If you are connecting multiple cameras, you will need to set each camera, one at a time, before connecting the next camera to the network, to a unique ID and IP address using the JSC-2300 SHOT Director.

Table 56 lists the default and recommended IP addresses for cameras 1 through 16.

Table 56. Default and Recommended IP Addresses for Cameras 1-16

Camera Number/ID	Recommended IP Address
CAM16	192.168.0.126 (default)
CAM15	192.168.0.125
CAM14	192.168.0.124
CAM13	192.168.0.123
CAM12	192.168.0.122
CAM11	192.168.0.121
CAM10	192.168.0.120
CAM9	192.168.0.119
CAM8	192.168.0.118
CAM7	192.168.0.117
CAM6	192.168.0.116
CAM5	192.168.0.115
CAM4	192.168.0.114
CAM3	192.168.0.113
CAM2	192.168.0.112
CAM1	192.168.0.111

Note The default IP address for the SHOT Director is 192.168.0.100 with a subnet mask of 255.255.255.0. If you add SHOT Directors to the network, use IP addresses 192.168.0.101 through 192.168.0.110.

Setting Soft Stops

Soft stops are software adjustable electrical limits for pan and tilt rotation.

- The default soft stops for both pan and tilt are ± 178º.
- If you install a prompter, you must set the tilt soft stops to ± 30º.
- You may also have to change default pan/tilt soft stops to prevent the camera and/or prompter from contacting an obstacle near the selected mounting location.
- To change the default soft stops, refer to the JSC-2300 SHOT Director Robotics/Camera Controller Instruction Manual for procedures.

Specifications

Robotic (pan/tilt head) specifications are listed in Table 57.

Table 57. Robotics Specifications

Pan Range	± 178º
Tilt Range	± 178º
Tilt Range w/ Prompter	± 30º
Pan and Tilt Speed	90º/s
Acceleration	360º/s
Accuracy - Repeatability	30 arc seconds (0.1" at 60') (1.4mm at 10m)
Maximum Load Capacity	75.0 lbs. (35 kg)
Noise Rating (@ 30º/s)	<30 dBm @ 1m
Control	Ethernet (10 Base-T)
Control Distance	Unlimited
Control Outputs	4 (TTL)
Power	120/240, 50/60 Hz, 100 W
Weight	20 lbs (9 kg)

Glossary

A

Aspect

The horizontal and vertical display dimension ratio of a picture; i.e., the width divided by the height (usually expressed as x:y). The aspect ratio of a traditional standard definition (SD) television screen is 4:3, or 1.33:1. High definition (HD) television uses an aspect of 16:9 (5 1/3 to 3), or about 1.78:1.

B

Bit Rate

The number of bits per second passed from one point to another.

Black

A black video signal generated within the switcher.

C

CCD (Charge-Coupled Device)

An image sensor used in digital photography.

CCFL (Cold-Cathode Fluorescent)

CCFL tubes are used for backlighting an LCD display.

Chroma

The depth or saturation of color. Chroma, hue, and luminance make up the three characteristics of television color.

Chroma Gain (chroma, color, saturation)

The gain of an amplifier as it pertains to the intensity of colors in the active picture.

Clip

A threshold level adjustment to which the keying attribute (luminance, chrominance) is compared for generating the internal key control signal. Clip, in conjunction with gain, sets the switching point between the background and the key fill. Also see Gain.

Component Video

A video signal that keeps color and luminance information separate. RGB; Y, R Y, B Y; and Y, Cr, Cb are examples of component video.

Composite Video

An encoded video signal that combines color information with luminance information. NTSC, PAL, and D 2 are examples of composite video.

D

E

Ethernet

A form of high speed data transport between devices on a network.

F

Field

One scan of an interlaced video image. In interlace systems, two fields are required to make a complete picture (video frame) because alternate lines are scanned. Also see Frame

Frame

One complete scan of a video image. For interlace video, alternate lines are scanned so a frame containing all the picture information consists of two fields. Also see Field.

Frame Rate

The number of frames presented per second. For interlace systems the frame rate is half the field presentation rate.

G

GPI (General Purpose Input)
GPO (General Purpose Output)

A digital signal interface, used to activate a device or piece of equipment for limited remote control of a device's functions.

H

HD

High Definition

House Sync

Sync generated within a facility that is used as a reference for generating and/or timing other signals.

Hue

The location of a color on the color spectrum (i.e. red, yellow, green, blue). Chroma, hue, and luminance make up the three characteristics of television color.

I

Interlace

A system of video scanning where the odd and even numbered lines of a picture are presented consecutively as two separate interleaved fields. The two fields required to make a complete picture are called a frame.

IP (Internet Protocol)

A data-oriented protocol used for communicating data across a packet-switched internetwork.

J

Jitter

An undesirable variation in the timing of transitions in a digital signal.

K

L

LCD

Liquid Crystal Display

LED

Light-Emitting Diode

Luminance

The brightness of the picture or area of the screen being considered. Chroma, hue, and luminance make up the three characteristics of television color.

The color video picture information contains two components: luminance (brightness and contrast) and chrominance (hue and saturation).

Lux

A measurement of illumination. The metric equivalent of foot candle.

M

MAC (Media Access Control)

A unique identifier (address) attached to most forms of networking equipment. On broadcast networks such as Ethernet, the MAC address allows each host to be uniquely identified and allows frames to be marked for specific hosts.

N

NTSC (National Television System Committee)

U.S. government and industry committee which defined the 525-line 60 (59.94) interlaced fields per second analog broadcast TV standard over 50 years ago. (This format is referred to as NTSC.) Of the 525 scan lines, 480 (give or take a few) contain the picture and the rest contain synchronizing information, hold the encoded closed caption text, and provide a time delay to move the electron beam back to the top of the screen. NTSC is used mainly in North America and Japan.

O

P

PAL (Phase Alternate Line)

A 625 line 50 interlaced fields per second analog broadcast standard used in many parts of the world, primarily Europe, but not the U.S.A. So named because the chroma sub signal phase is different on each successive scan line to reduce picture artifacts.

Pixel

A picture element. A pixel is a digital sample of the luminance and color values of a picture at a single point.

ProAv

Professional Audio/Video production.

Q

R

S

Saturation

The degree of purity of a color. Adding white to a color reduces its degree of saturation.

SD

Standard Definition.

Serial Digital Interface (SDI) [also Serial Digital Video]

A standard for digital video transmission over coaxial cable; i.e., passing video data bits in serial form (one bit after another), along a single wire. Standard Definition serial digital video (SMPTE 259M) operates at 270 Mbits/sec (2 x 13.5 MHz x 10 bits).

The SDI standard uses data words that are 8 or 10 bits in length. Signals are uncompressed and are self-synchronizing between the source (transmitter) and destination (receiver). A signal in SDI can contain up to four independent digital audio signals along with the video signal.

Serial Interface

An interface which allows the switcher to be controlled remotely by a computer editor or other serial controller. Data is passed serially between the editor and the switcher at selectable baud (transmission) rates.

S/N (Signal to Noise) Ratio

The amount of desired signal as compared to undesired signal. A way of measuring how good a picture or a sound will be. The higher the ratio between the desired type of signal and the unwanted noise, the better the results.

Source

1) An external device providing video. A source may provide only one video signal, or it may provide two signals (key fill and key cut).

2) The video signal(s) from a source, along with the source definition information associated with that source. See Source Definition.

Subnet Mask

In the Internet Protocol (IP), a subnet (or subnetwork) is a division of a classful network. Subnetting allows a single large network to be broken down into what appear (logically) to be several smaller ones. A **network mask**, also known as a **subnet mask**, **netmask** or **address mask**, is a bitmask used to tell how many bits in an octet(s) identify the subnetwork, and how many bits provide room for host addresses. They are typically used to determine whether to send a packet to the MAC address of the default gateway (for packets with destinations outside the subnet) or of the actual machine (for inside the subnet).

Switcher

A device that accepts inputs from a variety of video sources and allows the operator to select a particular source to be sent to the switcher's output(s). Also does transitions between sources and special effects (video mixing, wiping, keying, and such).

Sync

(1) General term for a synchronizing signal or signal component. Digital systems generally employ an analog external timing reference signal (such as color black or tri-level sync) to synchronize different pieces of equipment. Within the digital signal itself, however, synchronizing information is carried by special digital codes inserted at the beginning and end of each active line.

(2) In analog television systems, sync is the portion of the video signal which occurs during blanking and is used to synchronize the operation of cameras, monitors, and other equipment. Horizontal sync occurs within the blanking period in each horizontal scanning line, and vertical sync occurs within the vertical blanking period. A color black signal is often used for synchronizing different pieces of analog equipment.

T

Tally

A lighted indication that the associated video source is in use. Tally lights may be in front of a camera to show that it is the camera being used at that moment, or they may be used to light up the pushbuttons of video switchers.

Terminate, Termination

To complete a circuit by connecting a resistive load to it.

TFT

Thin-film Transistor. Often called “active matrix” display, this is the brightest, most viewable kind of LCD flat-panel display. It is also more expensive than “passive matrix” screens. In a TFT display, each pixel is actively controlled by one or more transistors.

TTL (Through-the-Lens)

Term used to describe a type of prompter. A TTL prompter mounts horizontally in front of the camera. A glass screen mounted 45° above the prompter reflects the script so that the announcer can read the text while looking at the camera behind the screen.

U

V

Video Switcher

See Switcher

W

X

Y

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